

AMERICAN VETERINARY REVIEW.

JANUARY, 1908.

EDITORIAL.

THE "REVIEW" AGAIN STRENGTHENED.

The continued illness of Dr. Bell has made it necessary to select an additional permanent member of the REVIEW's editorial staff. In searching the field for one whose many-sided abilities, incessant energy, intense professional loyalty, and broad knowledge of the condition of the science and profession in this country, we found in our list of collaborators one whom we believe to be an ideal occupant of the position.

Therefore, we beg to announce that, beginning with the present number, DR. WILLIAM HERBERT LOWE, of New Jersey, will contribute in large proportion to the editorial work of the REVIEW. While Dr. Bell will assist in the conduct of the REVIEW so far as his health will permit, his present condition will not justify great reliance upon his time.

Dr. Lowe needs no introduction to the profession of America, as his long and prominent labors in behalf of his profession, his recognition by the profession in a hundred ways, have made his name familiar wherever veterinary progress is being made.

We therefore take much pleasure in announcing this important addition to the REVIEW's ability to serve the profession in the best manner.

R. W. E.

EXCLUSION OF MILK FROM NON-TUBERCULIN TESTED COWS.

The Board of Health of the town of Montclair, N. J., in legislating that all cows supplying milk to that town shall be proven by the tuberculin test to be free from tuberculosis, appears to have taken a position in this matter in advance of most other municipalities in this broad land. It is to be hoped, however, that in its earnestness to eliminate all traces of tuberculosis through the agency of tuberculin that it will not lose sight of other factors and conditions that are quite as essential to the production of a good, sound, wholesome and nutritious milk supply as the test itself.

The new sanitary code provides that no milk shall be sold, offered for sale or distributed in Montclair except from cows which have been examined and tuberculin tested within a year by a veterinarian whose competency is vouched for by the State Veterinary Medical Association of the State in which the herd is located. A certificate of health, together with a temperature chart showing the record of the test of each individual animal, signed by the inspecting veterinarian, has to be filed in the office of the local Board of Health before the sale of milk will be allowed.

The object of the Montclair Board in issuing its edict in regard to the requirement of the tuberculin test, is to reduce, if possible, the high mortality which prevails in Montclair, as elsewhere, from tuberculosis among the human population, tuberculosis having caused 12.2 per cent. of all deaths in that town during the past year.

The greater portion of the milk supply of Montclair is said to come from one large concern. When the edict was issued this concern promptly gave notice to its customers that it would have to withdraw much of its supply at once, and a milk famine was threatened. Thereupon the Board of Health decided to give producers six months' longer time in which to submit to the required test.

The testing of all cows supplying milk to Montclair, or to any other place of like size, is a big undertaking if the work is properly and honestly done by capable veterinarians. If it cannot be properly and honestly done it had better not be attempted, for it would be unwise to remove danger signals until all possibility of danger is eliminated. The testing of a large number of dairy cattle will cost in proportion and will entail immediate pecuniary loss to owners of animals showing traces of the disease. It must be remembered that while Montclair can refuse to accept milk from untested cows, yet she has absolutely no authority to condemn or destroy cows belonging to dairies outside the limits of her own municipality, and it is from outside sources that much, if not most, of the milk supply comes. *It will require the supervision of the State and of the Federal Government, in connection with the work of local authorities, to give protection to the public in general—that protection which Montclair would afford to her own citizens.*

Montclair, however, deserves due credit and should receive encouragement and support from public hygienists and sanitarians. It is earnestly to be hoped that she may be able to surmount all obstacles that now seem to stand in the way of the accomplishment of what she has laid out to do, for after all it is the benefits resulting from scientific and professional work that warrant and justify the same, at least in applied science.

W. H. L.

ANIMAL HOSPITAL FOR TEACHING STUDENTS OF HUMAN SURGERY.

Medical men are beginning to appreciate the practical value of veterinary science and art in teaching human medicine and surgery. As an evidence of this we might refer the reader to a circular letter from the Cornell University Medical College, New York City, under date of Dec. 16, 1907, to veterinarians announcing the establishment of an Animal Hospital and Dispensary at 408 East Twenty-sixth street, in that city.

A strong appeal is made to veterinary practitioners to send them such animals (horses and cattle excepted) as they do not care to treat. Veterinary practitioners now have a place, besides the veterinary college, to send animals suffering from surgical conditions when the owner is too poor to pay for a required operation or is unwilling to incur the expense, and thus avoid the necessity for the other alternative of chloroform and a painless death.

Emphasis is made to the statement that animals are received for medical and surgical treatment, and in no sense for the purposes of experimentation. It is clinical and pathological material for *teaching purposes* that is desired. It is proposed to accept for treatment animals with surgical conditions of whatever kind. All branches of surgery will be represented on the staff of the hospital, including Ophthalmology, Otology, Laryngology, Gynæcology, Genito-Urinary and General Surgery.

The REVIEW believes that the medical faculty will find that the step they are taking will be of untold advantage in teaching students of human medical and surgical science, especially if they have on the staff trained veterinarians versed in comparative medical science and familiar with animal life, habits and conditions.

In the presidential address delivered before the American Veterinary Medical Association at New Haven, Conn., in 1906, the practical value of just this very thing was pointed out. The REVIEW feels a certain self-satisfaction in realizing that the voice from our profession is occasionally heard and heeded in that which concerns the well-being of man.

W. H. L.

EUROPEAN CHRONICLES.

PARIS, FRANCE, NOV. 15, 1907.

INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.
—I am afraid that I will be considered as rather too late in reporting the work done at the Fourteenth International Congress

of Hygiene and Demography, which was held last September in Berlin. But, besides the peculiar obligations under which I am working by sending my chronicles on the 15th of each month, it sometimes happens that my material reaches me just when my monthly communication has been mailed. So it was in this case. At any rate, here is a concise extract from the *Revue Generale* of what may be most interesting to our readers. It is on the subject of the Etiology of Tuberculosis.

The Congress was held in Berlin from the 23d to the 29th of September with about 2,000 members present out of nearly 4,000. There were eight sections and numerous and interesting questions were discussed, among which were: Etiology of Tuberculosis, new methods of immunization, pathogenous protozoars, insects as propagators of disease (especially ticks), etc., etc. It was in the first section that came the subject of "Etiology of Tuberculosis." It attracted the largest assistance. Prof. Arloing was one of the reporters. He presented his report defending the thesis of the variability of the bacilli of tuberculosis. He showed that the various types accepted by many authors were rarely realized in a perfect manner and that they were related to each other by intermediate forms, and finally that there would be a real danger to take these transitory differences to establish principles of prophylaxy.

Prof. Ravenel, of Philadelphia, presented the records of experiments and statistics which proved that the alimentary tract was often the door of admission of the tuberculosis bacilli. They may pass through the mucous membrane, principally during the digestion of fatty substances, without giving rise to any lesions. They pass with the chyle and reach the lungs, where they are held in large quantity. This infection is specially frequent among children, and the milk of tuberculosis cows is a cause, probably very serious, in the infection.

Prof. Flugge, of Breslau, advocated the pathogenous action of inhalation. Experience has shown that infinitesimal doses insure infection by the respiratory tract. For man the lung is the

far more frequent means of entrance of the bacillus than the intestines.

Dr. Ribbert, of Bonn, remarked that in human cadavers the bronchial glands and the lungs are most often exclusively the seat of lesions. Intestines act only a second part.

Dr. von Schrotter, of Vienna, believes by his observations of post-mortem that the lungs are invaded in most cases.

The discussion was very interesting, but no positive conclusions were arrived at: It showed that if there was unanimity in admitting the possibility of penetration of the bacilli by the respiratory and by the digestive tracts, it remained undecided which of the two had a relative frequency in the various species.

* * *

Of the other subjects that occupied the attention of the Congress I have but little information. On the question of the "New Methods of Immunization," the reporters agreed that if new modes have been advanced during the last years, nevertheless the question of immunity remains still as complex and without general possible application.

Reports were made by veterinarians in the second section. "Upon the Generalized Inspection of Meats to the Point of View of Prophylaxy," by Mr. Martel and Prof. Ostertag, and "Upon the Production of Pure Milk" by Prof. Porcher.

In connection with the Congress, there was an exhibition of specimens and documents upon the etiology, the pathological anatomy, the prophylaxy and the therapy of infectious diseases. The collection came from the Superior Veterinary School of Berlin, and belonged to Prof. Ostertag.

The next Congress will be held in Washington in 1910.

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If I have been behind time for the preceding Congress, I do not want to be for the "International Congress of Tuberculosis," which is to take place at Washington, from the 21st of September to the 12th of October, 1908, under the patronage of the

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American Association Against Tuberculosis. The general secretary is Dr. John S. Fulton, 810 Colorado Building, Washington, D. C., from whom I suppose all information can be asked. I hear that the Congress will be composed of seven sections, the last of which will be of greatest interest to veterinarians and also to those who are working in comparative pathology. The fact that our friend and collaborator, Prof. Leonard Pearson, is the president of that section, will no doubt add considerably to the importance that American veterinarians will see to be present at that Congress and contribute to some of the questions that will be presented.

But this little notice is only to mention the prospects of the Congress, and there is no doubt that Dr. Pearson will soon call the attention of his *confreres* in America to this great international gathering, if he has not done so already.

* * *

CHRONIC HYPERTROPHIED ENTERITIS.—Some time ago Prof. Leclainche, in his excellent semi-monthly, published an article upon "Chronic Hypertrophying Enteritis," which I cannot allow to pass without giving it the notice it well deserves.

The history of this affection is briefly this: It was in 1845 that for the first time the attention was called to that disease by Johnie and Frothingham. In 1903 Markus recorded one case and stated that, like the preceding authors, he had found that the intestinal lesions and the mesenteric lymphatic glands contained numerous acido-resisting bacilli. Overbeck also made several observations of the disease and said that diseased cattle did not react to the tuberculine test. In 1906 Lieneaux and Van den Eeckhout experimented with guinea pigs and succeeded in infecting most of them. They consider the disease as an attenuated form of tuberculosis. Borgeaud and Galli Valerio demonstrated that the lesions are not tuberculous; and finally, in 1906, Bang studied systematically the affection and gave a good description of it.

Animals of from two to six years are those which are principally affected with it. The onset of the attack is insidious, and its progress slow. Generally there is diarrhoea. The appetite is kept for a long time, and yet the animals lose flesh a little by little. There is no fever and a long comatose condition is present before death, which is certain to come. The lesions exist principally upon the posterior part, posterior half of the small intestine. The mucous membrane is thickened, wrinkled, and in the furrows of the transversal folds it appears warty, but without ulcerations. Peyer's patches are a little tumefied and some congested spots are found here and there disseminated. With the microscope the villi are seen deformed, hypertrophied by the accumulation in the chorion of numerous epitheloid cells, among which sometimes some giant cells may be found. The glands of Lieberkuhn are normal. The mesenteric glands are hypertrophied, but without nodular lesions. Under the microscope they appear infiltrated with epitheloid and giant cells.

In examining sections of glands and of the intestines, thick masses of acido-resisting bacilli are found, coloring with Ziehl, Gram, blue of Kuhne and Giemsa.

Bang does not accept the tuberculous character of enteritis, as he has not succeeded in obtaining cultures nor in inoculating the bacilli to various animals, when these did not, with the enteritis, have at the same time tuberculosis (say of the lung). At any rate, the cows that he did examine did not react to tuberculin.

The disease cannot be transmitted experimentally from bovines to bovines.

Hypertrophying enteritis exists in a great part of Europe and in particular in France. It certainly does not seem to have anything to do with tuberculosis. Its strictest localization in the intestines, the absence of tuberculous lesions in the glands, the histological aspect, the numerous failures in the attempts of inoculation to animals which are ordinarily reactive agents of tuberculosis, the absence of reaction of the animals when they are tuberculinized, all these are evidences against the idea of tuberculosis.

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As far as the presence of the acido-resisting bacilli is concerned, it is known that the homology of coloration of pseudo-tuberculous subjects is far from being sufficient to carry with itself the identity of the acido-resisting bacilli with that of the bacillus of Koch.

To resume, hypertrophying enteritis is a nosological entity, characterized by an incoercible diarrhoea and a progressive loss of flesh. Numerous acido-resisting bacilli are often found in masses in the fœces and in the invaded mucous membrane of the rectum.

The disease being contagious, consequently sick animals must be isolated; slaughtering is certainly the economical measure indicated, and disinfection of all parts that may have been infected by the excrements, are the essential sanitary measures that this affection demands.

FOLLICULAR MANGE AND ITS TREATMENT.—Everyone knows how rebellious follicular mange is, generally speaking, to any kind of treatment. Due to a small parasite, the *Demodex folliculorum*, which lodges itself in the skin of dogs, not on the surface, but, contrary to other parasites, in its thickness, the hair follicles, the sebaceous glands, and those of Meibonius, where it is found ordinarily in large numbers, in a single spot, arranged parallel along the root of the hairs, with the head turned towards the thickness of the dermis, its contagious nature, with the peculiarities that it presents, and the great difficulty that one meets in finding against it a successful treatment, all render the disease that accompanies its presence of great interest to every practitioner.

In the *Annales de Bruxelles*, Prof. Hebrant and his assistant, Mr. Antoine, published on "The Dermodectic Mange of Dogs and Its Treatment" a general review of the disease and of its therapy. For these writers the symptoms vary but little; still they may by their aspect allow the division of three types or forms, a dry or superficial, one pustular and a chronic.

The first is characterized by the presence of an acute dry eczema, with little itching, and depilation and redness generally

not much marked. The skin seems healthy and has no pimple, but examination with the microscope of the epidermis scrapings reveals the presence of the parasite.

The second may develop after the first form, but most ordinarily exists from the start. The animal has here and there hairless cutaneous spots, very red, with a bluish tint, if the skin is pigmented. This tegument is thickened, wrinkled, and presents pustules, from which a sero-purulent or bloody fluid can be squeezed out and in which loads of parasites are found.

In the third form, the skin is entirely hairless, is much thickened, much wrinkled and covered with pustules and epidermic desquamation, soon transformed into crusts. The peculiar *sui-generis* odor that dogs with follicular mange exhale, is almost characteristic of its presence.

The diagnosis of the disease is easily made out. It demands only the detection of the parasite, and Belgian teachers advise that an examination be made in ALL cases of skin diseases, even the most benignant, so as to detect the presence of any parasite, vegetal, or animal, if any is present.

In the consideration of the treatment, Prof. Hebrant examines the various methods under three headings—the medicamentous treatment, the surgical and the mixed.

In the first, parasitic agents which have been used are reviewed: sulphur and its compounds, sulphate of zinc, iodine in tincture, the various compounds of mercury, nitrate of silver, nitric and carbolic acids, creolin, variations of tars (mineral, vegetable or animal), naphthol, epicarin, petroleum, spirits of turpentine, ichthyol, balsam of Peru—all of which, among many failures in the results, have, however, given satisfactory recoveries in some cases and have been advocated by many European authorities.

As surgical treatment proper, only one is mentioned—that recommended by Prof. Cadeac, consisting, when the disease exists only on limited surfaces in the simple excision with the bistoury of the diseased cutaneous spots and the application of the

means, ordinarily resorted to, to obtain the cicatrization of the wound thus made.

So far as mixed treatment is concerned are mentioned: that of Cadeac, squeezing or excising of the pustules, followed by sprays of carbolized solution; that where the authors leave the carbolized water aside, and coats of tobacco juice are painted over the parts, or again, the one where alcohol is used instead: or, also, the one where the diseased spots are closely shaved, a circular incision is made, so as to prevent the parasite from going on another part beyond the affected one which is, after being scarified, thoroughly coated with tincture of iodine. Finally, this last method has been modified by, instead of scarifying the skin, it is rubbed with a coarse brush until blood oozes out, and then the tincture of iodine is applied. With this, recoveries have been obtained in about one month.

It appears that by using any of these various modes of treatment, if a recovery is obtained, it is only after a duration of close attention lasting weeks and months.

On this account the relation that I find in the *Journal de Wootechnie*, by Prof. Nicholas, of the Lyon School, will be read with interest. It is a treatment which in his hands has relieved dogs severely affected in fifteen days, several cases being recorded of its efficacy. The Professor says: "As the difficulty is to have the parasitic agent penetrate into the thickness of the skin, where the parasite lives, we have thought that this result could be obtained by injecting with the syringe of Pravaz in the thickness of the dermis, antiparasitic solutions, such as carbolic acid at 2 and 3 per cent., or tincture of iodine. After 4, 5 or 6 days the redness and the pustules have disappeared and after 8 days hairs began to grow. No matter what is the number or the size of the diseased patches, with a little patience and perseverance all the symptoms subside readily." * * * "to obtain a rapid recovery, injections must be made every day without interruption; injecting must be not only upon the seat of the lesions, but also a little around it on the healthy skin, using solutions of mod-

erate concentration and with very fine needles on the syringe, so as to avoid necrosis of the skin at the points of injection. An essential condition of success is also to see that the kennels are kept thoroughly disinfected and cleaned."

Under the influence of this treatment, improvement is soon noticed; after the third or fourth day the skin is not so thick, it loses its redness and on its surface small scabs are formed, which soon fall off and leave the new hair growing. The treatment, however, must not be stopped too soon, but has to be kept up for a while. It is perfectly harmless.

The results that have been obtained by this treatment are such that practitioners in the canine specialty will do well to give it a good trial.

THE TREATMENT OF TETANUS.—Can these be used in our daily practice or not, is a question that I am not prepared to answer. But as, after all, they have succeeded in the hands of others, although on patients different from ours, it is not proper to ignore them. I am alluding to two preparations which have been used by two Italian physicians of Rome, Drs. Almagia and Mendes. One of them in previous researches has attempted to discover what was the substance which, in the so-well known experiment of Wassermann and Takaki, fix the tetanic toxine upon the nervous tissue. He arrived at the conclusion that lecithine and cholesterine possess properties of fixation similar to the entire nervous substance. The power of fixation and of neutralization of the tetanic toxine is much more developed with cholesterine than with lecithine. These discoveries decided Almagia to try, with a certain success, the injections of cholesterine as a preventive means in animals primitively inoculated with toxine. In two cases of human tetanus, these two doctors resorted to these injections and have obtained two recoveries.

In one case, it was a severe attack of lockjaw, with respiratory troubles, acceleration of the beatings of the heart, notwithstanding massive doses of antitetanic serum. With injections of cholesterine made in doses of 15, 30 centigrams and then of

one and of one and a half grammes, the symptoms began to retrocede after the fifth day.

In the second case, the attack was also severe and the progress of the disease rapid, the injections of cholesterine formed the exclusive medication. As much as 2 grammes and 80 centigrams were injected in one day.

Not considering these two cases as cases of chronic tetanus developing with a spontaneous march towards recovery, the authors believed that injected as they did, cholesterine truly neutralizes the toxine as soon as it is produced and thus gives the organism a chance to rid itself of the toxine already existing and fixed upon the nervous centers and also of the bacilli.

If the observations can be realized with our animals may be an interesting question to solve. But, again, there is the question of expense. Cholesterine would have to be injected in rather large doses, and it is no doubt costly.

ATTENDANCE AT EUROPEAN VETERINARY SCHOOLS.—For many, this is the age of automobiles—autos for all kinds of work, from that of heavy carting to the elegant coupés and victorias, without forgetting the public conveyance, the auto-bus! And for the enthusiastic admirers, it is not difficult to reach the stern conclusion: The future of the veterinarian is doomed!

Is it? Not in the estimation of all. And a statistic that I find in one of our scientific papers here tells us that the fears of the disappearance of the horse by the fantastic growth of the number of automobiles all over the world are not so very great with all, and that, after all, the future number of members of the veterinary profession is far from diminishing.

The statistics I refer to gives the names of 27 schools in Europe with the number of students that were attending in 1905. Indeed, 6,039 students were registered in that year in the following schools, arranged according to their respective numbers of attendants: Kasan, 582 students; Kharkow, 504 students; Berlin, 482 students; Budapest, 413 students; Vienna, 377 students; Copenhagen, 370 students; Madrid, 345 students; Munich, 319

students; Dorpat, 310 students; Alfort, 292 students; Saragosse, 275 students; Hanover, 251 students; London, 230 students; Dresden, 202 students; Naples, 200 students; Lyon, 180 students; Toulouse, 177 students; Bruxelles, 153 students; Milan, 158 students; Utrecht, 113 students; Leon, 100 students; Stuttgart, 100 students; Turino, 90 students; Cordoue, 75 students; Stockholm, 55 students; Bucharest, 52 students; Lemberg, 47 students.

And in this list are not mentioned the other four British schools: the Veterinary Department of the University of Liverpool, the Dick Veterinary College of Edinburgh, the Glasgow Veterinary College and the Royal Veterinary College of Ireland at Dublin. Likewise are missing the records of the schools of Berne, Zurich, Pisa, Bologna and several others.

It would be interesting if we were able to add to these the list of colleges and of students attending the numerous institutions of the New World, North and South America and other countries. So far the only statistics that we have is that made by Prof. Williams, where it is said that out of 18 schools, 1,941 students had been registered.

A. L.

THERE is within the territory of the United States something like 300,000,000 acres of public grazing land which is open to the free grazing of cattle, sheep, horses and goats without restriction.

ENORMOUS ENLARGEMENT OF INTERNAL ORGANS.—Veterinarian James T. Shannon, Lexington, Ky., reports result of an autopsy made on the stallion Intrusive as follows: "The spleen was very much increased in size; length 36 inches, width 20 inches on the under part, weight 24 pounds. Liver very much increased in size; weight 30 pounds; kidneys very much increased in size, weight 2 pounds 2½ ounces each. Heart enlarged, wall thickened, weight 15 pounds. Other organs normal." Intrusive died suddenly, having been sold at public auction the day before apparently in good health and in fine condition.

ORIGINAL ARTICLES.

OBSERVATIONS ON THE VETERINARY SCHOOLS IN EUROPE.

PROF. PIERRE A. FISH, ITHACA, N. Y.

Presented at the 44th Annual Meeting of the American Veterinary Medical Association, at Kansas City, Mo., September 10-13, 1907.

During a recent visit to Europe, twelve veterinary colleges distributed throughout six different countries were visited. There were varying conditions in these countries and as the methods and customs were quite different from those in America, a brief description may be of some interest.

In the order in which they were visited, the Liverpool Veterinary School comes first. This school forms part of the University of Liverpool. The course of instruction is four years long, each year being divided into three terms of about ten weeks. There are about sixty students. The requirements for entrance are English, grammar, arithmetic, algebra, geometry, Latin and one of the following optional subjects: Greek, or any modern language or logic. A note in their catalog for 1905-6, however, states that "as there is a probability in the near future of a university degree for veterinary surgeons, candidates are strongly advised to, if possible, pass a high standard preliminary examination—that is, one which will qualify for university graduation."

The tuition to cover the instruction is eighteen guineas, or a little more than \$90 per year. The strictly veterinary portion of the work is carried on by Professor W. O. Williams and Professor Share-Jones, with assistants. For the remaining work the students mingle freely with the university medical students in the various departments.

There is no clinic at the University, but the corporation of Liverpool has placed its horse depots, including over six hundred horses, and Veterinary Infirmary at the disposal of the veterinary staff of the school for purposes of instruction. The students of the fourth year also attend the indoor clinics of some of the veterinary establishments in the city.

I understood also that veterinarians who were qualified might obtain the degree D. V. H., Doctor of Veterinary Hygiene, by devoting two terms to the study of the appropriate subjects at the University.

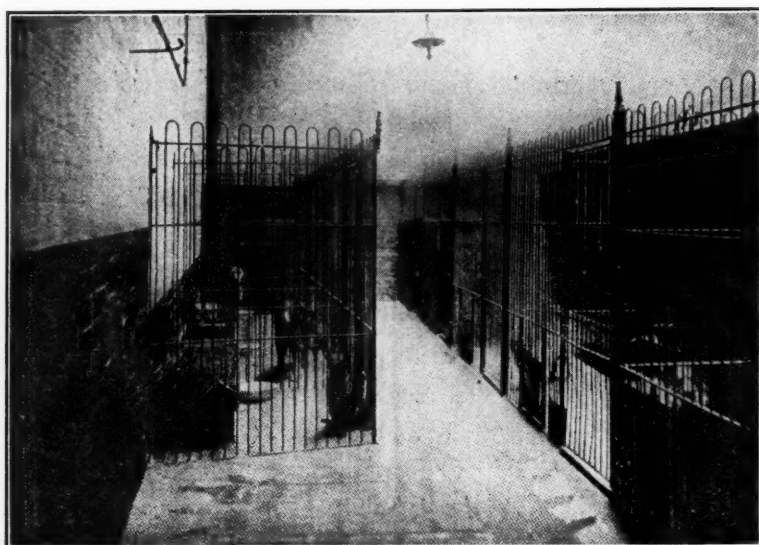


FIG. 1—CANINE HOSPITAL, LIVERPOOL.

The Royal Veterinary College of London was founded in 1791, and incorporated in 1875. According to its latest catalog the University of London has recently instituted a Degree in Veterinary Science (B. Sc.). "The possession of this degree will not of itself entitle the holder to practice as a veterinary surgeon, but it is hoped that year by year an increasing number of students will, while studying for the diploma of the Royal College of Veterinary Surgeons, also adopt the curriculum which

is necessary to qualify for the University examinations and obtain the degree of Bachelor of Science. In conformity with the statutes of the University, the Professors of Chemistry, Biology, Anatomy, Physiology, Hygiene and Pathology in the Royal Veterinary College are recognized teachers in the University.

Four years of study are required at the Veterinary School for a student to be eligible for the examinations given by the Board of the Royal College of Veterinary Surgeons. It is expected that an additional year must be taken in order to acquire the University degree.

The entrance requirements are much the same as for the school at Liverpool and include: English Language, Latin, Arithmetic, Algebra, Geometry and one optional subject, either Greek or one of the modern languages.

From Oct. 1 to about the middle of March there are two terms. A summer term begins May 1, and continues to about the middle of July.

A novel method for raising revenue exists in this college. A person or firm properly approved and elected becomes a "Subscriber" to the college. Persons who contribute twenty guineas (about \$100) in one sum are life subscribers, otherwise they pay two guineas (about \$10) per annum and are entitled to the privileges of a subscriber so long as they continue their subscriptions. A subscriber has the following privileges: He may have in the course of any year five horses examined for soundness free of charge either before or after purchasing. Any additional horses are charged for at the rate of 10s. 6d. (about \$2.50 each). He may have admitted into the Infirmary for medical and surgical treatment an unlimited number of horses and other animals *his own property* at a charge only for their keep.

He may be supplied with medicine for *his own* animals at a fixed charge.

At a fixed rate he may have at the college a chemical analysis of any water, provender, oil-cake or other feeding material,

or of the viscera and their contents of any of *his own* animals suspected of having been poisoned.

He may have the opinion of one of the professors without the payment of a fee as to the medicinal treatment of any of *his own* animals, brought for this purpose to the college, which he may desire to retain in his own keeping.

In cases of extensive or serious outbreaks of disease he may have an investigation made into its nature and causes with a view to its prevention or cure, on payment of the fixed charges.

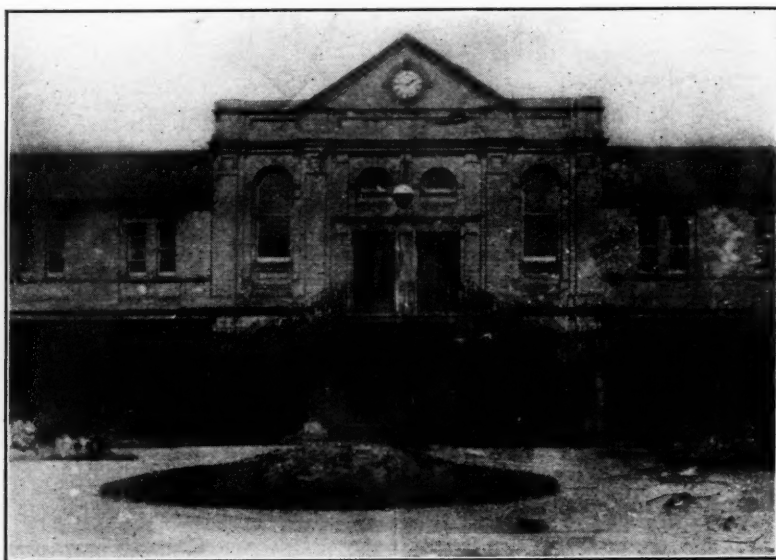


FIG. 2.—ROYAL VETERINARY COLLEGE, LONDON, COURT FACING THE ENTRANCE.

He may have a post-mortem examination of any animal, or parts of an animal, sent to the college, and receive an opinion of the probable cause of death on payment of a fixed charge.

The professors are not allowed to examine horses as to soundness out of the college, nor visit sick animals except by special permission of the Principal or Professor in charge, and then only for the purpose of consultation with a veterinary surgeon or with the object of the removal of patients to the Infirmary for treatment.

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The sick animals of the subscribers constitute the internal clinic of the college. This clinic is under the direction of Professor Penberthy (Medicine) and Professor MacQueen (Surgery), each professor having charge two days alternately. The students do not participate in this clinic to any extent except as onlookers. There is also an external clinic, which is in charge of Professor Woodruff (Materia Medica). There is a nominal charge of 1s. (25 cents) to enter the patients in this clinic. A great many cases are examined here and the students of the



FIG. 3.—VETERINARY HOSPITAL AND LECTURE ROOMS (UPSTAIRS), UTRECHT, HOLLAND.

fourth year take an active part in performing minor operations and keeping records. Two hours in the forenoon and two in the afternoon are devoted to the clinics.

The tuition is twenty guineas a year (about \$100). In addition there is a fee of 1 guinea to the library and reading room fund to be paid prior to entry and a further fee of 10s. 6d. annually. The number of students in attendance is about 200 and the number is diminishing. It is believed by some that the

decreasing attendance is due to the automobile 'bus service in London.

The veterinary school at Utrecht under the directorship of Professor Wirz is the only school of its kind in Holland. Like the schools in England it has a four year course. There are 'quite extensive grounds with a number of buildings. There are about 140 students in attendance. The clinical hours are in the forenoon from 10 to 12. The clinics are free as to consultation and medicine, but there is a charge for the fodder that the animal consumes. I was informed that there is a good demand for veterinarians in Holland and that they do well.

Some idea of the work accomplished may be obtained by glancing over the following table, taken from the catalog of this school for 1904-5. The table represents the number of cases treated in each clinic during the period of one year:

	Stationary Clinic.	Consulting Clinic.	Ambulatory Clinic.	Total.
Horses and Asses.....	413	901	89	1,403
Cattle	32	260	447	739
Sheep .....	....	5	1	6
Goats.....	12	57	3	72
Varkens (swine).....	....	27	11	38
Dogs	223	1,413	2	1,638
Cats .....	....	296	....	296
Birds .....	....	432	....	432
Other animals.....	68	....	....	68
Total.....	748	3,391	553	4,692

At Hanover, Germany, I found a comparatively new and beautifully arranged veterinary school in its group of botanical gardens. It was under construction from 1895 to 1899, and I was informed that its cost amounted to 4,000,000 marks (\$1,000,000). About twenty buildings are included in these grounds and it indeed surpasses in beauty and extent some of the smaller universities in the United States.

The entrance requirements, as I understood it, are the same throughout Germany. A student must have passed through a gymnasium (about 9 years), which corresponds to a High School education and that which precedes it in the States.

The length of the veterinary course is seven semesters of about five months each, or a total of three and a half years. The tuition per year at Hanover is 160 marks (\$40). An eighth semester is devoted to final examinations for those who are eligible and able to complete the course. For this semester no tuition is charged.



FIG. 4.—INSTITUTE OF PHYSIOLOGY AND CHEMISTRY (REAR), VETERINARY SCHOOL, HANOVER.

The medical and surgical clinics under Professors Malkmus and Frick, respectively, and the clinic for small animals under Professor Künneman, are well patronized. The students do not operate upon patients, but study them, dress wounds and keep records of their progress. Subjects are purchased for the students to operate upon and these are then utilized for dissection. In the clinic there is no charge made for consultation. Medicines.

are furnished at about 25 per cent. below the usual rates. A payment of 2 marks (50 cents) per day covers everything in the surgical clinic.

There are about 240 students in attendance at the Hanover school. Military service is compulsory in Germany and veterinarians are not exempt from it. Because of their higher education, and this applies to medical and university students also, only one year is required instead of two years as for ordinary individuals. A student must serve out his military term before he can embark in private practice. I was informed that the government would pay the expenses (not personal) of a student at a veterinary school and in return would require him to serve from seven to ten years as an army veterinarian—at least one year for each semester.

The veterinary school at Berlin leads all the other in the number of students, there being 335 in attendance. Berlin, I was informed, is a military school and the students attending there are preparing for service as army veterinarians. The grounds of the Berlin school are about as extensive as those of Hanover and there are numerous new and modern buildings. Some of the older buildings are to be replaced by new ones in the near future. A number of the professors live in a building situated upon the grounds. This is true to a much less extent of the majority of the schools visited in Germany—either a professor or some of the assistants being furnished with quarters.

In addition to the medical clinic under Professor Fröhner and the surgical under Professor Eberlein and the clinic for small animals under Professor Regenbogen, there is a very large polyclinic under Professor Kärnbach. A great many animals are treated in these clinics.

Professor Zuntz, Director of the Agricultural School, not far from the Veterinary School, but independent of it, has done some important work upon the physiology of the domestic animals.

The tuition is the same as at Hanover, \$40.

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It was told as a matter of historical interest, that Virchow as a young student did some work at the Veterinary School, and it was there he discovered the bacillus of malignant oedema. Also that Koch's discovery of the Bacillus of Tuberculosis and the Comma Bacillus occurred in a building situated near the Veterinary grounds.

I am under considerable obligation to Professor Ostertag and his assistant, Dr. Himpel, for courtesies rendered in making it possible for me to attend various lectures and clinics, not only in the Veterinary School, but in the University of Berlin as well.

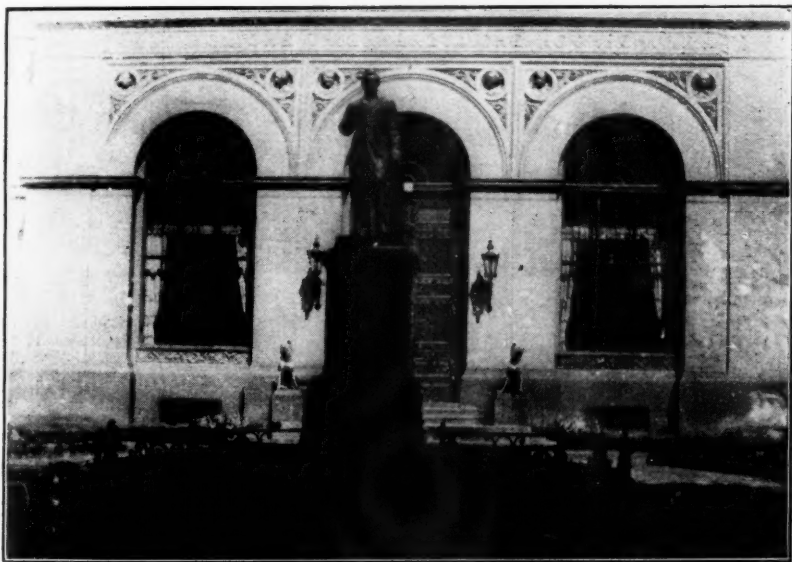


FIG. 5.—ENTRANCE TO THE BERLIN VETERINARY SCHOOL, STATUE OF GERLACH.

The following data relating to attendance and cases presented at the clinics at Berlin was taken from the *Veterinary Journal* for September, 1907, and relates to the year 1905-6:

"During the summer session 400, and during the winter 416 students were on the roll of the school, and 21 military students. One hundred and ten presented themselves for the final examination, of whom 97 passed.

"One thousand seven hundred and twenty-seven horses and 1 donkey were treated in the medical wards under Professor Fröhner, and 760 horses in the surgical under Professor Eberlein. Six hundred operations were performed. Six thousand nine hundred and thirteen large animals were attended as out patients under Professor Kärnbach and 1,908 minor operations were performed. In the canine ward, under Professor Regenhagen, 1,260 patients were treated and 244 operations were performed. Eight thousand dogs, 181 cats and 14 monkeys were attended as out patients and 632 minor operations were performed.



FIG. 6.—ENTRANCE TO THE VETERINARY SCHOOL AT MUNICH.

"Post-mortem examinations were made by Professor Schütz on 305 horses 1 donkey, 2 oxen and 113 dogs. Professor Eggeling paid 453 visits and treated 52 horses, 486 oxen, 561 pigs and 3 goats."

The grand total of all the animals treated in the various clinics amounts to 20,017.

The Veterinary School at Dresden, under the directorship of

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Professor Ellenberger, is not so extensive as those at Berlin and Hanover, but the buildings are well appointed and conveniently arranged. In a building upon, or adjoining, the grounds reside veterinarians in the military service who take a course of about six months in horse shoeing and the forge under Professor Lungwitz.

The clinics are conducted on a plan similar to that at Berlin, but the charges for the patients are somewhat less. There are about 167 students in attendance. The tuition is 160 marks (\$40) per year, with 10 or 12 marks additional for special purposes.

The Veterinary School at Munich, with Professor Albrecht as director, has buildings somewhat older than the other German schools, but they are well equipped and arranged. The building containing the pathologic collection of Professor Kitt is the most antiquated, but the collection is most interesting. I was informed that Professor Kitt had recently been retired on account of disability.

The tuition charges are only 60 marks (\$15) a year at this school and the clinical charges are also lower than at the other schools. The attendance is about 320.

According to the catalog for 1905-6 the Munich school received the following number of animals in their various clinics:

	Horses.	Ruminants.	Carnivora and Herbivora.	Swine.	Dogs.	Carnivora.	Cats.	Birds.	Birds and other Animals.	Total.
Medical Clinics.....	312	3	..	23	797	..	39	59	..	1,233
Surgical Clinics—Large ani- mals diseased.....	549	22	..	51	..	..	..	..	..	622
(Operated upon).....	(412)	(21)	..	(51)	..	..	..	..	..	..
Surgical Clinics—Small ani- mals diseased.....	..	..	23	..	..	1,032	..	..	32	1,087
(Operated upon).....	..	..	(20)	..	..	(712)	..	..	(20)	..
Polyclinic, Surgical Division..	6	..	..	..	1,831	..	78	..	52	1,967
Polyclinic, Medical Division..	36	..	..	..	2,419	..	148	..	213	2,816
Ambulatory Clinic.....	194	618	..	1,081	..	111	..	..	89	2,093

The Veterinary School at Stuttgart, under the directorship of Professor Süssdorf, has grounds about as extensive as those at Dresden and Munich. Some of the buildings are quite antiquated, but the institute of Anatomy and Pathology and the departments of Medicine and Surgery are well quartered in relatively new and commodious buildings. There is quite an elaborate system for ventilating the hospital wards of both of these

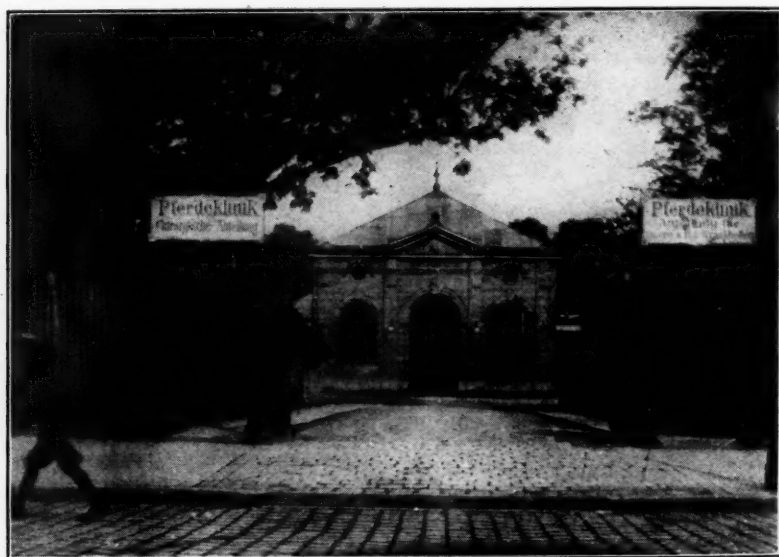


FIG. 7.—ENTRANCE TO THE VETERINARY SCHOOL AT STUTTGART.

departments. The department of surgery, under Professor Hoffman, shows a wonderful range of mechanical ingenuity in the arrangement and manipulation of its apparatus. There is an elaborate operating table regulated by hydraulic pressure. It may be turned to a vertical or horizontal position or tilted to any angle and may be raised or lowered by means of a lever. There is also an elaborate apparatus for confining a horse by means of a system of clamps for the head and neck, the feet being fastened to the floor. A large Roentgen Ray apparatus

is also included in the equipment. The stalls are most conveniently and hygienically arranged for the comfort of the patients. Water is supplied to each stall automatically through a pipe, so that the patient has always a supply before him. There are from 120 to 150 students at this school and the tuition is 140 marks (\$35) per year.

It was a matter of much regret that time did not permit me to visit the Veterinary School at Giessen. I was informed that it had quite a close relationship to the medical department of the University—more so than other schools in Germany.

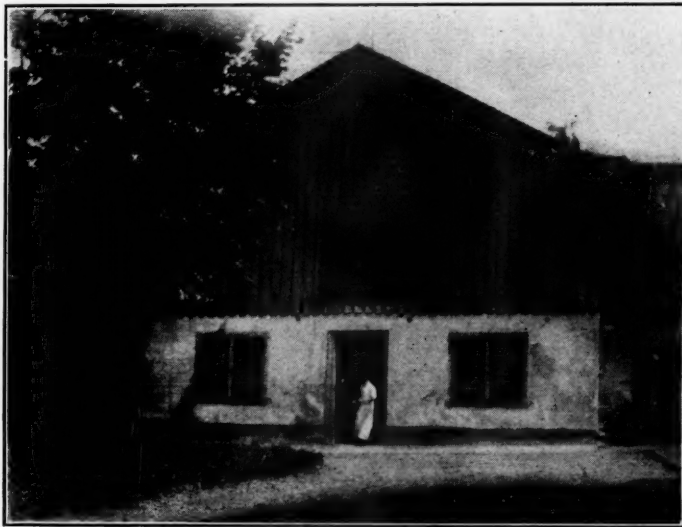


FIG. 8.—VETERINARY HOSPITAL, ZURICH.

In Switzerland, the first school that I visited was at Zürich. Unfortunately, the season for instruction ended at about the time I was there, and I was unable to witness the work and meet as many of the professors during the remainder of the trip as previously.

This school is affiliated with the University of Zürich, although the school buildings are some distance from it. There is no separate director of the school, the president or director of the University officiating as such. A portion of the course,

including botany, zoology, physics, chemistry and physiology, is therefore given at the University. The veterinary faculty is included with that of the University. The school is small, including only 35 students, and the buildings are somewhat old. The entrance requirements for the schools in Switzerland are similar to those in Germany.

There is also compulsory military service in Switzerland. It differs in some interesting ways from that in Germany, so far as veterinarians are concerned. As it was explained to me, the young man, while still a student, must serve in the recruit school,

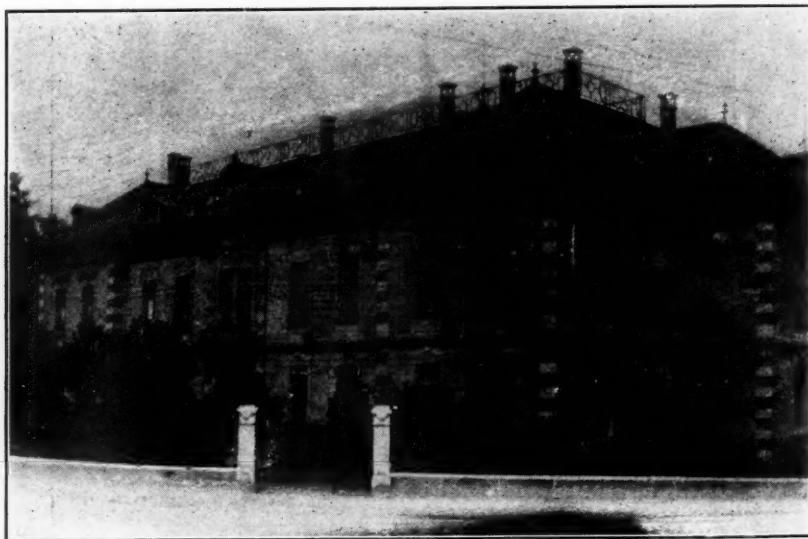


FIG. 9.—VETERINARY SCHOOL, BERNE.

devoting eight weeks to military service if in the artillery, or twelve weeks if in the cavalry. If he wishes to maintain some connection with the army, he attends the under-officers school (optional) for five weeks for the artillery branch. Then comes the officers' school (also optional) after the state examination, where he spends six weeks. Then he becomes an officer-lieutenant and must serve eight weeks if in the artillery, or twelve weeks if in the cavalry. After the officers' school comes what

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is known as the "Wiederholens Kurs" (Repetition), and the lieutenant must serve every second year for three weeks until he is 32 years of age. A lieutenant gets 6 francs, or \$1.20 a day while serving.

The following report of the clinical work at Zürich for 1906 was furnished me during my visit:

	Hospital Clinic.	Ambulatory Clinic.	Consulting Clinic.	Total.
Horses	921	1,089	3,474	5,498
Asses and mules.....	1	..	13	
Cattle	38	1,626	76	1,740
Swine	2	92	205	299
Goats .....	..	8	3	12
Sheep.....	..	1	..	
Dogs.....	563	163	1,933	2,659
Cats	5	12	264	281
Fowls.....	..	47	10	84
Parrots	1	1	2	
Other birds.....	1	..	22	14
Rabbits.....	1	..	10	
Guinea pigs.....	..	..	2	14
Squirrel.....	..	..	1	

The remaining Swiss Veterinary School is at Berne and is affiliated with the University of that city, although the buildings are separate. This school is larger than the one at Zürich, having 45 students. The grounds are somewhat larger and the buildings are more modern and commodious.

The veterinary faculty is included with the University faculty. The Swiss, like the other schools, have clinical periods during the forenoon. The tuition in both schools is from 200 to 300 francs (\$40 to \$50) per year. The course in both schools is four years long.

Through the kindness of Dr. Liautard, who accompanied me, I obtained a very fair idea of the school at Alfort, Paris, al-

though the work of instruction had ceased. The grounds, with their pleasant groves and numerous buildings, are very extensive and contain statues of Bourgelat and Bouley and a bust of Nocard. A few of the older buildings still remain.

The clinic continues through the vacation and presented a scene of considerable activity at the time of my visit, many of the students remaining to assist. There are between 250 and 300 students in attendance and they take their clinical work during the third and fourth years of their course. The rates



FIG. 10.—CLINICAL AREA, ALFORT, WITH VIEW OF STATUE OF BOURGELAT IN THE DISTANCE.

are very cheap at this school, as I was informed that a student could get his veterinary education and living on the payment of something like 450 francs (\$90) per year. There is a dormitory for the students upon the grounds.

On a second visit to the school, I met a Chinese student, who informed me that his government sent him there and paid his expenses and that when he returned he would be the first veterinarian in China.

I was informed that the Alfort school is supported by the government under the Secretary of Agriculture and gets an annual appropriation of \$175,000.

As in Germany, military service is also compulsory in France, but apparently no allowance is made for the veterinary education, as I was told that the veterinarian must spend two years in the army either as an army veterinarian or common soldier.

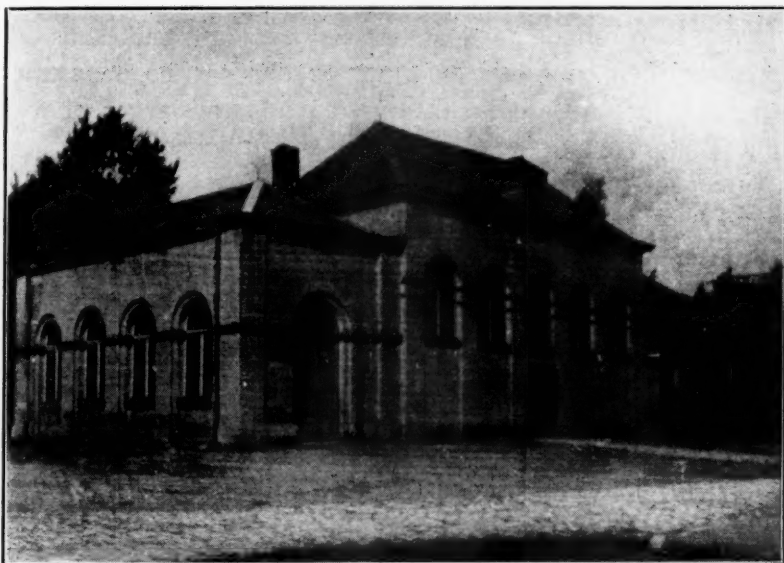


FIG. 11.—BUILDING FOR CLINICS, BRUSSELS.

The Veterinary School at Brussels, Belgium, under the directorship of Professor De Give, is evidently an old school, and there is a larger proportion of old buildings here, with perhaps the exception of Zürich, than the other schools visited. I was informed that the course in this school is six years in length, the first two years being taken in the University and that such subjects as botany, physics, zoölogy, psychology are taken there, and the remaining four years are spent in the Veterinary School. Or if the four years in the Veterinary School are regarded as the period of professional work, then it may be accepted that the

two years of University work are required for entrance to the Veterinary School.

The tuition is 300 francs (\$60) per year, with an additional charge of 20 to 60 francs (\$4 to \$12) for laboratory fees; there are 150 students in attendance. It is entirely optional whether the student shall go into the army or not, as veterinary military service is not compulsory in Belgium.

One of the facts, I think, which impresses the American visitor to the veterinary schools on the Continent is their extensiveness; the grounds are spacious and there are numerous buildings upon them, a single building for one or two departments, with their laboratories and museums, being larger than the whole equipment in some of the American schools.

Governmental support of schools, as it exists in Germany, is conducive to a high degree of efficiency. Some of the advantages are: Uniformity of entrance requirements; none but well educated and qualified veterinarians are in practice. An illegal practitioner is, I judge, a *rara avis* in that country. With practically the same regulations, the system of instruction is interchangeable and a student may transfer from one college to another without loss of time or credit. In some instances living quarters are given to the teachers in addition to their salaries.

The methods of instruction of the German schools I visited while in session, attending lectures, clinics, etc., are, I understand, typical of the others. According to the schedule some of the work begins at 7 o'clock in the morning and some continues until 6 p. m. In none of the lectures which I attended, although present promptly on the hour, did any of the lecturers begin until from fifteen to twenty-five minutes after the hour had struck. This long delay is customary throughout Germany in other branches as well as the veterinary.

There is not, as I observed it, the paternal interest in the student as in America. The German system of having the chief examinations at the end of the course—apparently on the plan of "pay when you get through"—results in quite a large percentage of students not getting through at the scheduled time.

because of dilatoriness and not keeping up to the mark. This again is a custom which is prevalent in Germany in the universities as well as veterinary schools.

Although the schools are well provided with laboratories, and they are finely equipped, and although they are used for research by assistants or advanced students, the idea was impressed upon me that the laboratory courses for the *undergraduate* students could stand a higher degree of development in such branches, for example, as physiology, pathology and bacteriology.

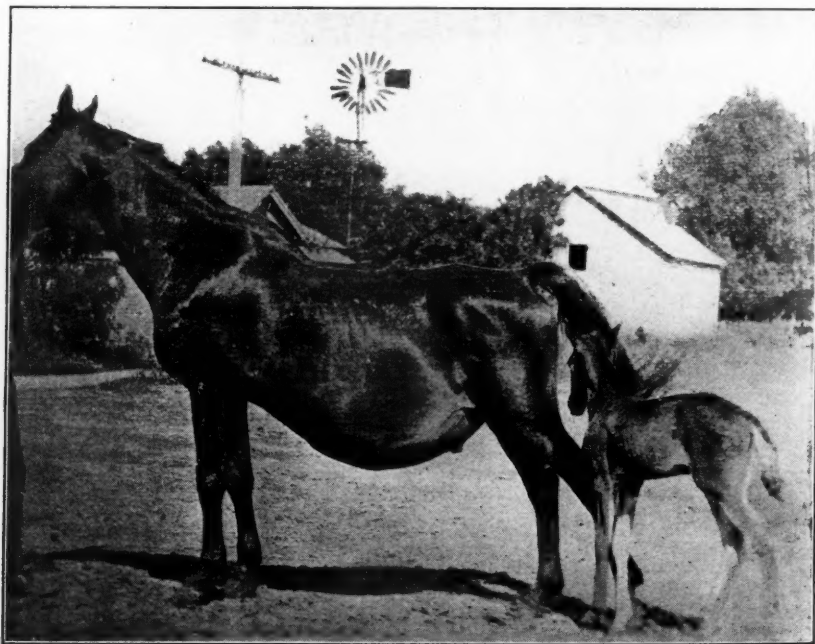
In France, although the government is generous in its appropriation to the Alfort school, the conditions surrounding the veterinarians in practice are not of the most desirable. I was informed that practice in veterinary medicine was practically open to any one who wished to take it up. Veterinarians from other countries may settle in France without let or hindrance, which is no disadvantage if they are properly qualified. But the absence of legal restrictions, except in connection with outbreaks of contagious or infectious diseases, against unqualified persons taking up the practice of veterinary medicine, is a condition which can have no other effect than to retard veterinary progress in that country.

The Veterinary Schools in Holland and Switzerland appear to follow more or less closely the methods of Germany; while the school in Belgium is apparently more like those in France.

The European schools have the prestige of age. The first Veterinary School was founded at Lyons, France, in 1762. Other schools were established soon afterwards; one appeared at Alfort in 1765; others at Copenhagen in 1773; at Dresden in 1774; at Vienna in 1777; at Hanover in 1778; at Budapest in 1786; at Berlin and Munich in 1790; at London and Milan in 1791, and at Madrid in 1793. Although earlier attempts may have occurred, the first successful establishment of a Veterinary School in America was that of the New York College of Veterinary Surgeons, which was chartered in 1857. The Ontario Veterinary College at Toronto, Canada, was established

in 1862 and the American Veterinary College in 1875. Since then others have been established, some of them with State support, but the proportion of the number of Veterinary Schools to that of the general population is still apparently less in America as compared with Europe. Relatively, veterinary science is young in this country and the prestige of years and adequate financial and government support is still to be attained.

UNUSUAL LOCATION OF TEATS AND MAMMARY GLANDS IN MARE.—The accompanying illustration of mother and offspring is furnished the REVIEW by H. Thomson, veterinarian, Newman Grove, Neb. The colt was three weeks old at the time the picture was taken. It is now six months old and mother and colt are in good condition. Notice the location of the teats and



that there is not the slightest sign of mammary glands. In his letter to the Editors, however, Dr. Thomson states that the colt suckles, going between its mother's hind legs to do so. The fact that the colt suckles and that it has been well nourished would indicate that the mammary glands must be developed and that they are functionally active, although abnormally located.

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DESCRIPTION OF DISEASES SHOWN AT AMERICAN VETERINARY MEDICAL ASSOCIATION, AT KANSAS CITY, KANSAS, SEPTEMBER 12, 1907.

PREPARED FOR THE REVIEW BY PROF. SESCO STEWART, *Dean of the Kansas
City Veterinary College, Kansas City, Mo.*

1. Generalized tuberculosis in hog showing very extensive lesions in the lungs, liver, spleen and their lymphatic ganglions. Also well-marked lesions on the serous membranes—(Pearl Disease)—both visceral and parietal pleura, peritoneum and omentum.

2. Generalized tuberculosis in hog showing very extensive lesions in the cervical region—both glandular and muscular. Also well-marked lesions in the lungs, liver, spleen, on pleura, visceral and body lymphatic glands.

3. Generalized tuberculosis in hog showing very extensive lesions of all the visceral lymphatic glands, nearly all the body lymphatic glands, lungs, liver, spleen, pleura, kidneys, pancreas and bones.

4. Tuberculosis—a common every-day case—hog condemned on final post-mortem inspection showing calcified lesions of the cervical, bronchial, hepatic, and superficial inguinal lymphatic glands.

5. Tuberculosis—hind-quarters of hog—showing lesions in the hock joint and sublumbar lymphatic glands. Also spleen from same hog.

6. Tuberculosis—fore quarter of hog—showing lesions in the elbow joint.

7. Tuberculosis—loin and ribs of hog—showing lesions on the pleura, in the bones and sublumbar lymphatic glands.

8. Tuberculosis—loin of hog—showing lesions in the sublumbar lymph glands, with liver and spleen from same hog.

9. Tuberculosis—lungs and liver of hog—showing extensive caseous encapsulated lesions in the lungs, with caseous calcareous lesions in the bronchial and mediastinal lymphatic glands. Also lesions in liver and hepatic lymphatic glands.

10. Tuberculosis—lungs, liver and spleen of hog—showing miliary tuberculosis of lungs and liver, with well-marked tubercles in spleen.

11. Tuberculosis—liver with stomach attached, spleen and kidneys from same hog, showing well-marked lesions of tuberculosis.

12. *a.* Hog heads showing a series of tuberculosis lesions.

b. Hog heads showing the congested lymph glands from a case of hog cholera.

c. Hog heads showing abscess formation in submaxillary lymph glands.

13. Hog cholera showing extensive and progressive lesions on the skin, bones, glands, bloody urine, inspissated bile, with a hepatization of the lungs—possibly a mixed infection of the swine plague.

14. Swine plague showing diffuse skin lesions, large, soft and black spleen, congestion of the kidneys, with an acute hepatization of the lungs and a slight pleurisy.

15. Hog cholera; very extensive and progressive circumscribed lesions on the skin; petechia in kidneys, leaf lard, lesions of spleen and liver; petechia heart muscle; ulceration and acute inflammation in large intestines.

16. Swine plagues; diffust skin lesions, well marked icterus, large, soft and black spleen, congestion of the liver and kidneys, with acute red hepatization of the lungs.

17. Pyemia showing very extensive abscesses on the carcass, with multiple metastatic abscesses in the lungs, liver and intestines.

18. *a.* Pyemia showing abscess formation of the bones, lungs, liver, spleen and small intestines.

b. Hog showing hepatogenous icterus.

19. Hog condemned for chronic peritonitis and pleurisy, both visceral and parietal lesions.

20. Hog showing multiple fatty necrosis extensive and well-marked lesions in carcass and viscera.

21. Two shoulders showing specimens of the cysticercus cellulosa—the pork measles bladder worm—larval stage of the tape worm in man—*tænia solium*.

22. Livers showing hydatids or echinococcus disease in the hog—larval state of the tape worm of the dog—*tænia echinococcus*.

23. Loin of a hog showing location and lesions produced by the *stephanurus dentata*.

24. *a.* Liver from hog showing chronic intestinal hepatitis, with scar tissue formation due to parasitic irritation.

b. Loop of intestine showing the tubercles produced by the parasite, *echinorynchus gigas*, lesions yellowish in color and may be mistaken for tuberculous patches.

c. Loop of intestine inverted showing parasite and its attachment to the mucous membranes, with its armed trunk, causing irritation and tubercle formation.

25. *A series of skin diseases of the hog:*

a. Integument showing acute erythematous conditions.

b. Integument showing dark spotted pigmentations.

c. Integument showing dark diffuse pigmentation.

d. Integument showing acute erythema, due to traumatism.

e. Integument showing papillomata.

f. Integument showing follicular mange, produced by the *demodex folliculorum*.

g. Integument showing acute circumscribed hemorrhagic spots, from a case of hog cholera.

h. Integument showing normal conditions.

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26. *A series of lung lesions of the hog:*
- a. Lungs showing tuberculosis.
 - b. Lungs showing abscess formation with chronic pneumonia.
 - c. Lungs showing a well-marked congestion.
 - d. Lungs showing acute hepatization.
 - e. Lungs showing gray hepatization with approaching resolution.
 - f. Lungs showing catarrhal pneumonia.
 - g. Lungs showing normal conditions.
 - h. Lungs and heart showing chronic pericarditis.
27. *A series of pleural lesions of the hog:*
- a. Pleura showing tuberculosis.
 - b. Pleura showing acute pleurisy.
 - c. Pleura showing chronic pleurisy with well-marked exudation present.
 - d. Pleura showing parietal and visceral adhesions.
 - e. Pleura showing normal conditions.
28. *A series of peritoneal lesions of the hog:*
- a. Peritoneum showing chronic peritonitis.
 - b. Peritoneum showing acute peritonitis.
 - c. Peritoneum showing multiple abscesses.
 - d. Peritoneum showing adhesions.
 - e. Peritoneum showing normal conditions.
29. *A series of liver lesions of the hog:*
- a. Liver showing interstitial chronic hepatitis.
 - b. Liver showing multiple abscesses.
 - c. Liver showing yellow pigmentations.
 - d. Liver showing fatty degeneration.
 - e. Liver showing tuberculosis.
 - f. Liver showing hydatid disease.
 - g. Liver showing normal conditions.
30. *A series of spleen lesions of the hog:*
- a. Spleen showing tuberculosis.
 - b. Spleen showing multiple abscesses.

- c. Spleen showing the large, soft and black condition from a case of swine plague.
- d. Spleen showing atrophy.
- e. Spleen showing normal conditions.
- 31. *A series of kidney lesions of the hog:*
 - a. Kidneys showing tuberculosis.
 - b. Kidneys showing fatty degeneration.
 - c. Kidneys showing yellow pigmentation from a case of icterus.
 - d. Kidneys showing petechia.
 - e. Kidneys showing hyperemia.
 - f. Kidneys showing cystic conditions.
 - g. Kidneys showing the location of the stephanurus dentata in its capsule.
 - h. Kidneys showing normal conditions.
- 32. *A series of pancreas lesions of the hog:*
 - a. Pancreas showing necrosis of the adipose tissue.
 - b. Pancreas showing tuberculosis.
 - c. Pancreas showing normal conditions.
- 33. *Intestinal diseases from hog:*
 - a. Large intestines from hog showing acute inflammation.
 - b. Small intestines from hog showing tuberculosis in the mesenteric lymph glands, also the presence of the echinorynchus gigas in the intestinal loop.
 - c. Small intestines from hog showing mesenteric emphysema.
 - d. Loop of small intestines showing the presence of intestinal worms.
 - e. A portion of small intestines with mesentery showing normal condition.
 - f. Stomach showing acute gastritis.
 - g. Stomach showing normal condition.
- 34. Leaf lard and omentum showing adipose tissue necrosis.
- 35. Hind-quarter of hog—showing melanosis—lesions in mammary glands with tumor on belly.

36. *Three specimens showing diaphragmatic hernia in hog:*
 - a. One lobe of liver and part of omentum in the thoracic cavity.
 - b. One lobe of liver in thoracic cavity.
 - c. Omentum in thoracic cavity.
37. Liver of hog showing concretions in parenchymatous tissues, and in the bile ducts.
38. Small intestines of hog showing faulty development or arrested development of the mesentery.
39. Extra uterine pregnancy—sow—showing a foetus which was developed in the abdominal cavity, enclosed in the omentum.
40. Head of a calf—a well marked case of hydrocephalus.
41. Aegagropilæ—a collection of hair balls found in the rumen and reticulum of cattle.
42. Large abscesses from region of neck of a cow, lesions show well-defined walls with a peculiar organized condition of its contents.
43. Diaphragmatic hernia in steer showing a portion of the liver and peritoneum in the thoracic cavity with adhesion of lungs.
44. Ovaries from a cow showing multiple cysts.
45. Ovaries from a sow showing multiple cysts.
46. Supernumerary digits in the hog.
47. Specimen from a hog showing dilatations of the rectum, imperforation of the anus and the rectum communicating with the vagina.
48. A portion of the reticulum from a cow showing the presence of foreign bodies; one nail caught in the folds of the mucous lining, and another has perforated its walls, causing a chronic irritation with abscess formation.
50. Two hind-quarters showing extensive necrosis and atrophy of muscular tissues, from a hog that was paralyzed behind.
51. Specimen from a hog showing extensive bruises of muscular tissues in region of the flank.

52. Abscess—steer—sublumbar region, on right side with liver adhesions, the lesions show well-encapsulated walls of the abscess.

53. Abscess formation in mammary glands of the hog.

54. Abscess formation from scrotal region of the hog.

55. Mammary gland of cow showing lesions of tuberculosis.

56. Two kidneys from a hog—pathological alterations—lymphosarcoma.

57. Two kidneys from a hog, the right kidney and adenocarcinoma weighing 13 pounds the left kidney normal in size, weighing 3½ pounds.

58. Bovine spleen showing a large hæmatoma weighing 12½ pounds.

59. Bovine carcass showing 22 sarcomatous neoformations of the mixed cell variety.

60. Large fibroma taken from the flank region of a cow, weight 20 pounds.

61. Lymphosarcoma taken from the sublumbar region of a steer.

62. Cystic kidney taken from a hog, weight 20 pounds.

63. Generalized tuberculosis—cow tagged with the U. S. Suspect Tag, on ante-mortem inspection showing a well-marked enlargement of the cervical region, and on post-mortem inspection showing extensive lesions in submaxillary and retropharyngeal lymphatic glands, a large abscess posterior to pharynx, extensive and progressive lesions in the lungs, pericardium and pleura, bronchial and mediastinal lymph glands, liver and mesenteric lymph glands, and peritoneum, carcass emaciated and anemic.

64. Bovine pleura and peritoneum showing very extensive tubercular lesions on pleura, also in the lungs and lymphatic glands from the same animal.

65. Bovine pleura and peritoneum showing slight lesions of tuberculosis on the pleura and peritoneum. There was no infection of the shoulder muscles with integument from the same

region. Lesions in the prescapular lymph glands, also extensive lesions in lungs, bronchial and mediastinal lymph glands, liver and mesenteric lymph glands.

66. Liver from a generalized case of tuberculosis in a bull showing very extensive and caseous lesions with a general hypertrophy of the liver, which weighed 63 pounds.

67. Bovine liver from a healthy bull, weight 12 pounds.

68. Bovine shoulder—from a generalized case of tuberculosis—showing very extensive caseous lesions of the prescapular lymph glands.

69. Bovine heads showing a series of tubercular lesions, both caseous and calcified.

70. Bovine lungs showing extensive and progressive lesions of tuberculosis.

71. Lungs from a Texas steer showing very slight calcified tubercular lesions in the bronchial and mediastinal lymph glands, with slight foci of infection in the right lung.

72. Pleura and peritoneum from a young fat cow showing very extensive tubercular lesions (Pearl Disease).

73. Peritoneum and lungs from a large native steer showing acute tubercular lesions in the lungs and their lymph glands with acute peritonitis.

74. Bovine uterus—from a generalized case of tuberculosis—showing an infection of the ovaries and uterus.

75. Bovine mammary glands—from a case of generalized tuberculosis—showing well-marked lesions of tuberculosis in the organ and its corresponding lymphatic glands.

76. Bovine small intestines showing tuberculosis in chain of the mesentery lymph glands.

77. *A series of lesions in bovine lungs:*

a. Lungs showing tuberculosis.

b. Lungs showing actinomycosis.

c. Lungs showing chronic pneumonia.

d. Lungs showing a localized abscess.

e. Lungs showing melanosis.

f. Lungs showing adhesion to diaphragm.

g. Lungs with heart showing pericarditis with adhesions.

78. *A series of lesions in bovine livers:*

a. Liver showing spotted capillary angiomas.

b. Liver showing atrophic cirrhosis.

c. Liver showing hypertrophic cirrhosis.

d. Liver showing biliary calculus in gall bladder.

e. Liver showing parenchymatous hepatitis.

f. Liver showing well-marked peritoneal adhesion.

g. Liver showing multiple abscesses.

h. Liver showing an accessory lobe.

i. Liver showing yellow pigmentation, from a case of hepatogenous icterus.

j. Liver showing coccidiosis.

k. Liver showing tuberculosis.

l. Liver showing infestation of the distoma hepaticum, liver somewhat hypertrophied, the biliary canals very much enlarged and calcification of their walls.

m. Liver showing the location of flukes in the parenchymatous tissues, also the lacunar chambered spaces full of a clammy, bloody, viscous liquid, in which the flukes are found.

79. A series of bovine heads showing different lesions of actinomycosis.

80. Bovine tongues affected with actinomycosis—the pathological alterations known as wooden tongue.

81. Two bovine heads showing foreign objects imbedded between the teeth and muscles.

82. Bovine œsophagus showing threadworm, *Filaria scutata bovis*.

83. Bovine œsophagus showing the larva of the œstrus bovis.

84. Bovine small intestines showing subcutaneous nematode tubercles caused by the larvæ of the anchylostomum bovis. These nematode tubercles are very common and very frequently found in bovine intestines.

85. Bovine small intestines showing ossification of the mesentery.
86. Calf kidney, pathological alteration, sarcomata.
87. Bovine caul showing fatty necrosis.
88. Bovine pleura showing acute circumscribed pleurisy—traumatic.
89. Bovine pleura showing chronic pleurisy with well-marked exudations.
90. Bovine pleura showing lesions of tuberculosis.
91. Bovine pleura showing acute circumscribed traumatic pleuritis with fracture of ribs.
92. Bovine peritoneum showing chronic peritonitis with well-marked exudations.
93. Bovine peritoneum showing multiple abscesses.
94. Bovine peritoneum showing lesions of tuberculosis.
95. A portion of a bovine carcass showing very extensive bruises.
96. Bovine shoulder showing bruises with gangrenous condition.
97. An acute state of Texas fever in a calf showing the intense icteric condition of the carcass: large, soft, black, friable spleen; bloody urine; the liver showing a yellowish hue and gall bladder containing a viscid inspissated bile.
98. Integument from scrotal region of a Southern steer showing the cattle tick—the *boophilus annulatus*—the carrier of Texas fever.
99. Spleen of an acute case of Texas fever in a calf.
100. Spleen from a healthy calf.
101. Bovine spleen of an acute case of Texas fever.
102. Spleen from a healthy steer.

Parasites Displayed.

103. The common liver fluke—*distoma hepaticum*.
104. The large American fluke—*distoma mangum*.
105. *Filaria cervina*, found in the abdominal cavity of domestic cattle.

106. *Stephanurus dentata*, a common parasite in swine.
107. *Ascaris lumbricoides suilla*, common intestinal worm of the hog.
108. *Echinorynchus gigas*, intestinal worm of the hog—armed but not segmented.
109. *Tænia expansa*, common tape worm of cattle.
110. *Strongylus contortus*, found in the abomasum of sheep and goats, in lambs and yearling sheep.

Diseases Found in Sheep.

111. Lungs—sheep—showing caseous lymphadenitis.
112. Liver—sheep—showing large caseous abscesses.
113. Abomasum—sheep—showing the location of the *strongylus contortus*.
114. Lamb showing emaciation and anemia, caused by infestation of the *strongylus contortus*.
115. Intestines of sheep showing nodular disease. Lesions produced by *œsophagostoma columbianum*.
116. Sheep showing extreme emaciation.
117. Sheep showing icterus and hernia.

VETERINARIAN W. E. A. WYMAN is devoting his entire time to the meat and milk inspection of the city of Covington, Ky.

PRESIDENT ROOSEVELT in his recent message to Congress, referring to the new meat inspection law, declares that "two years have not elapsed, and already it has become evident that the great benefit the law confers upon the public is accompanied by an equal benefit to the reputable packing establishment."

SECRETARY LYMAN AT KANSAS CITY.—The Kansas City Veterinary College is not content with its increased facilities for teaching veterinary science to its 460 students, but is strengthening its able faculty by the addition of more talent. Richard P. Lyman, B. S., M. D. V. (Harvard), Secretary of the American Veterinary Medical Association, has responded to a call from the Kansas City Veterinary College to lecture on the "Practice of Medicine and Principle of Surgery" in that progressive institution.

THE PREPARATORY EDUCATION OF VETERINARY STUDENTS.

ADDRESS OF PROF. W. L. WILLIAMS, V. S.,

Before the Association of Veterinary Faculties and Examining Boards of North America,
at Kansas City, September 9, 1907.

In estimating the strength of a veterinarian or member of other profession our attention is directed prominently to three important factors:

1. His personality; his mental capacity, character, integrity, vigor, prudence, enthusiasm.
2. His academic or preparatory education.
3. His scientific or professional attainments.

Some emphasize one of these, others believe another the most important, but in our dealing with the second we shall draw no comparisons with the other two and shall regard each of the three as alike essential to efficiency.

The preliminary training of the student has from the first constituted a complex problem in American veterinary education and no substantial agreement has yet been reached in either theory or practice. In a majority of American veterinary colleges the matriculation requirements are elastic and evasive and any definite entrance demands are darkly veiled beneath a "Common School Education," which may be made to mean anything or nothing as the interested parties may elect. Neither are we to hope for any accord in this direction until we reach a common ground also in reference to character and professional training.

If we are to admit to our veterinary colleges the dissolute and dishonest, the mountebank and charlatan with the same freedom or satisfaction that we do the highest type of young men; if after admitting students to college classes we offer a course of instruction which fails to enable them to secure an efficient professional training, then high matriculation requirements are in part or wholly wasted.

Hence in discussing the problem of preliminary education the other two factors suggested need be kept in view, since all three must be kept in harmony.

The aims of preparatory education for a profession may be expressed in two ideas which, followed closely, ultimately converge and become essentially identical. On the one hand it is held that the academic education demanded for entrance into a veterinary college should have for its chief or sole aim an enabling function through which the student shall be prepared to understand and profitably pursue the professional subjects, while others value academic training chiefly for the culture and refinement it affords and by which the veterinarian is largely enabled to assume higher social rank in his community. The two thoughts need not be antagonistic. An education which will enable a man to pursue an advanced course in veterinary science with the greatest profit also fits him to assume a position in his community as an educated gentleman; any course which insures to the student a liberal education at the same time contributes to his ability to acquire sound professional training, but when not designed intelligently to that end may not have the same practical value in a technical education.

The matriculation requirements of American veterinary schools are as variable as their courses of study, character of equipment or faculty.

The extremes may well be illustrated by the Ontario Veterinary College which for many years demanded for entrance an examination in "Reading and Writing" and the neighboring colleges in the State of New York, which, under a State law, demand four years of satisfactory high school work. Between these two technical extremes every possible variation occurs, both in theory and practice.

While the two requirements cited appear very wide apart the actual difference depends largely upon the interpretation of the terms. Reading and writing are very indefinite terms and the rule can be applied with greater elasticity. A five-year-old child who

reads from a primer "The dog runs" and can express it in characters which may be interpreted, may be said to be able to read and write and has proven his claim by reading and writing. At the opposite extreme the rule could be so interpreted so as to comprise a thorough knowledge of the English language, ability to read and properly understand its highest and best literature and to write it readily, correctly and fluently. Such an interpretation would surpass in some very important respects the apparently much higher requirements of New York.

Veterinary colleges in the State of New York may admit students upon Veterinary Students' Certificates issued by the Regents or State Education Department, but these are not mandatory and the college may make further demands upon the student before registering him, although in practice they are admitted without further question in reference to preparatory education. In one, if not both of the New York schools, the universities of which they each form a part have a very excellent rule by which any student who is markedly deficient in English may be excluded, which has not yet been too drastically applied to matriculants in the veterinary colleges.

The quantity and quality of preliminary education to be demanded needs to be based primarily upon our interpretation of veterinary science. Two distinct and divergent views of veterinary practice are held in America; one group maintains that it is a profession, the other that it is a trade. Each party is correct; some practitioners belong to the one, some to the other. He who intelligently, earnestly and efficiently studies veterinary science in college and in practice, and renders proper service to the live-stock owners and the community, belongs to a highly honorable and honored profession; he who memorizes a few empirical rules by which certain symptoms demand the application of given remedies and authorizes the collection of fees it becomes a trade or avocation, and a very poor one at that. In discussing our subject we shall aim to confine ourselves to the student who hopes to become a part of an honorable profession, and to the

college which aims to have its graduates shun the veterinary trade and enter the *profession*.

Language constitutes the chief means for communication between man and man, and teaching is accomplished almost wholly through its agency, whether it be in class room, laboratory or clinic. If the student would profit by a lecture he needs understand the language of the teacher and to be able to place some of the thoughts in a permanent form upon paper; if he would learn from a text-book, if he would learn from a library, he must understand the language of his author. When the student has learned his text or received other instruction, he must employ language as the chief means of expressing the knowledge which he has acquired, and it is through this expression of thought in language that the teacher must chiefly judge the work of the student and later constitutes our best basis of measuring the practitioner. The first and greatest essential in preparatory education is that of language, of that language in which the study is to be prosecuted. With the exception of Laval University and its alumni, English is the language of American veterinary education and practice, and should take precedence over any or all other preparatory studies. Education consists chiefly of an acquisition of the knowledge and thought of others, verified and elaborated by personal experience and observation. The student needs have such preliminary training that he may clearly comprehend the teachings of writers and lecturers; if these are to be of a high order then his command of language must be of corresponding efficiency.

It is not easy to apply a fixed standard of measurement to acquirements in language. Two, three or four years of English in a high school insures the contact of the student with representative English literature by the best authors, but cannot assure us he has learned the language. Inferentially some knowledge of English has been acquired, else the student fails to pass the required examinations in this and other subjects, but frequently it is with a low mark, which signifies a poor command of language. Only a small minority of American veterinary colleges

emphasize English as among the requirements for entrance, but others apparently demand it by implication. The New York law makes no specific demands upon this point, but as a matter of practice high school graduates include among their studies more or less extended study of the English language and literature, and even in the technical absence of this the pursuit of other branches necessarily involves the use of the language and some degrees of proficiency is assumed to follow as a logical sequence.

Veterinary science is a world science and veterinary knowledge is recorded in many languages. The most and best veterinary literature emanates from Continental Europe, where the governments have long supported veterinary education liberally and consistently for its value to the nation. A very large and important part of our standard English veterinary literature is translated, extracted, borrowed or otherwise obtained from European authors, and yet only a small part of this finds its way into our language after important delays or through imperfect translation. The volume of meritorious veterinary literature in the German, French, Italian and Scandinavian languages is so great that the successful veterinary student needs have command of one or more of these, especially of German or French, and we consider the college or teacher having the professional success of the student at heart should at least point out to him the great importance of a preparatory working knowledge of one or more of these before entering upon his veterinary study. In addition to the command of language which we consider so essential as a preparation for the study of veterinary science, there are other subjects of a preliminary character which need be mastered before the student can properly comprehend the purely professional subjects. Veterinary study and practice frequently comes into close relations with the natural sciences.

An elementary knowledge of physics is essential to a clear conception of anatomy, physiology and in many ways in the mechanical handling of disease.

Botany has a wide interest in the study of animal foods, of organic drugs and of poisonous plants, and a majority of the in-

fectious diseases are due to the growth of vegetable organisms within the tissues of the animal body.

Zoology includes within its field the domestic animals themselves, their organization, habitat, food methods of feeding, the changes wrought in them by food or other conditions. It embraces a long list of animal parasites of that higher group known as entozoa and epizoa, those parasites which in addition to their direct injuries also act as the bearers of other smaller parasites like the trypanosomes by the mosquitoes, and finally the protozoan group of disease-producing organisms.

Chemistry holds an important place in the preliminary education of the veterinarian. Elementary chemistry is essential to a due conception of the composition of foods, medicines, poisons and of the secretions and excretions of the animal body.

We have mentioned briefly those studies which seem directly essential as a basis for the advantageous study of veterinary science; the languages supply the means for the interchange of ideas, the sciences constitute the foundation for veterinary education.

In addition to the studies suggested many others could be added with great benefit by affording a liberal education. The A. V. M. A. has placed its seal of approval upon the excellent preparatory work accomplished by the agricultural schools and recognizes graduation from these as entitling the student to an allowance of one year in the veterinary college course and in practice the veterinary colleges are always anxious to admit these men on as liberal terms as possible, finding them pre-eminent in their veterinary classes.

Such preliminary education as we have outlined fulfills alike the needs for efficiently studying veterinary science and the recognition of the veterinarian as an educated gentleman. It is essential that the latter object be kept constantly in view, since our profession cannot make the desired advances until the social position of the veterinarian is recognized as secure and honorable. Young men of refinement and education cannot be expected to enter the profession in large numbers unless they can be

assured, as they can, that they will be admitted cordially into just as good society as veterinarians as they would be in any other profession or calling. College degrees cannot give a man social position, else it would be easily acquired through high sounding veterinary degrees so liberally bestowed. Legal enactment cannot secure social prestige, else some of our State veterinary laws would work wonderful effects upon certain of the veterinary practitioners. The A. V. M. A. has attempted to secure recognition and rank for the veterinarian in the United States Army, but has failed largely because it was attempted by legal enactment to make an uneducated man the social and official equal of an educated one. The standing of a veterinarian in his community depends not upon his college degree nor upon legal enactments supposedly in his favor, but upon his personal character, preliminary and professional training.

The completion of such a preliminary education as outlined would require three or four years of diligent high school work and would thus prolong the time necessary for the procuring of a veterinary degree. The time is not serious, however, in normal cases where the student attends school regularly, since he may accomplish his four years of high school work at sixteen years and still allow five years for professional study ere he attains his majority. A boy with good mental capacity and an earnest worker can finish his high school course, followed by a four years' course in arts or agriculture and finish his veterinary course with an allowance of one year by the time he has reached the age of 22, surely young enough to commence his career as a veterinary practitioner.

The New York law, requiring four years of successful high school work, which technically stands in the front rank among the veterinary schools of America, is deficient in quality and kind. It places too high a value upon quantity rather than quality. Latin or Greek count for as much as German or French; higher algebra or geometry for as much as chemistry or zoology. In so far as they relate to a liberal education, they are no doubt

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just as valuable, nor would we argue that they are not even better, but for our specific purposes we consider them distinctly inferior.

Quality counts for naught except to pass, regardless of the duration of time required. A man may take each subject two or more times successively before he finally passes with marks barely sufficient to pass, but finally when he succeeds, he is just as eligible for entrance to a veterinary college as the brightest and best of the school. If a man is studying English and barely passes for four successive years he is probably a far poorer English scholar from the standpoint of efficiency than he has who has passed one year with high honors, yet the man with four years' credit has four times the entrance credits that his superior fellow student possesses and each of these credits counts for as much with low marks as with high. It is a difficult objection to overcome, which is analogous to the student in the veterinary college who requires one or two extra years to limp through the veterinary college, his first year subjects forgotten before the last ones have been reached, yet he holds his place and drags himself through college to later continue to drag along through the world. We believe that a great advance could be made in the requirements of all those colleges demanding more or less high school education by stipulating that certain specified branches be included and that an allowance be made for quality. We would have English more highly valued for admission than Greek, and would regard a mark of 95 in one year of English worth as much as a bare pass in two years in the same subject.

Various objections are raised to the demanding of such preliminary education as suggested. It is claimed that the social position and the emoluments of veterinary practice in America do not warrant the expense, time and labor. Here and there we have enough of such veterinarians to disprove the claim. If any individual veterinarian is singled out for comparison it will be found that his standing is quite as good in his community as though he were a member of other profession or vocation. In European countries where the preliminary requirements for the

study of veterinary science are high, the members of the profession stand correspondingly high in their respective communities, in practice, in civil and military service.

The American veterinarian comes more and more in contact with broadly educated men. The enormous development of agricultural education has resulted in a large proportion of the leading farmers and stock breeders taking degrees from agricultural colleges, preceded by graduation from a high school; the leading merchants and business men who own animals, if not university graduates, are at least liberally educated. The veterinarian cannot meet these upon equal terms except with approximately equal education.

Invasion of fields logically belonging to the veterinarian are now and then threatened by the agriculturist because of his higher and better education, consisting of four years each of high school and college or university work. We have been told that in some States the authorities prefer, for tuberculin testing, and hence for the control of bovine tuberculosis, the agriculturist to the veterinarian, simply because of his more thorough scientific training.

The veterinary service in America is everywhere defective and fragmentary. In the cities there are rules for the handling of corns and quittor probably a trifle in advance of half a century ago, but among fresh horses from the Western farms, exposed during shipment and disposal to a number of deadly contagious maladies, there is virtually no plan for control, and the losses from this one group of affections costs the American people millions annually; each year enough to far more than pay the total equipment and cost of maintenance of all our colleges put together, and they will never be controlled until we have a more efficiently educated body of veterinarians. Conditions in the country are quite as bad, if not worse. A case of dystokia or retained after-birth is handled approximately as it was by the cow leech of a century ago, infectious abortion is almost not handled at all, and sterility is treated by mysterious impregnation

concoctions dispensed by veterinarians whose education consists wholly of a big degree. Over the whole field of veterinary practice only a part of the cases are handled at all, and there is scarcely an area which would not to-day afford abundant room for the addition of an equal number of veterinarians without affecting the practice of those already occupying the field. But the men for this task must be of a higher type than those now existing and must be prepared to take up the work now left undone by existing veterinarians.

It is objected that men so highly educated as those we have suggested will not enter the filthy cow stable or pig-stye to accomplish the needed work, and that for such duty it is necessary to have a more ignorant man, who will blend with the filth. On the face of it the objection is untrue. If you would consult the literature upon the diseases under these filthy surroundings you must turn to the writings, based upon the experiences, of highly educated men. True, the ignorant and dirty practitioner goes into these places, but we have no record of improvement as a result of it, the pig-stye or cow-shed is none the cleaner for it, and he so blends with the filth that his presence passes unnoted. The educated and efficient veterinarian enters the filthy places a clean person and emerges clean; he preserves his identity and dignity, he dispels the filth and replaces it with cleanliness, he modifies conditions, he produces results.

In a recent conversation with a graduate of a leading school he complained that the maximum fee he could command for removing a putrid after-birth from a cow was \$1.50, because a competent cow doctor did it that price. Questioning revealed the fact that they did the same kind of work. They went dirty into the filthy cow stable, wore dirty clothes for the operation, found the cow dirty, left her dirtier than when they came away, were no cleaner themselves for their experience and relied upon the antagonism between various forms of bacteria for disinfection. This is the type of veterinarian to which the argument of a poorly educated man for dirty work leads. The opinion was promptly

and frankly expressed that he was receiving as high fees as his services warranted and suggested that for better remuneration there should be exhibited a higher sense of cleanliness, of education and of culture, in harmony with his college teaching. Later advices indicate that the suggestion is being carried out with satisfactory results.

It has been further objected that a demand for such preparatory education would exclude many highly meritorious young men from the profession. Education of every grade, including veterinary science, is free in America, and there has not recently been a time when any healthy, intelligent young man could not acquire such learning as he desired. We have not known a young man who failed to get an education because of financial want. In every high school, college and university in the country there are plenty of young men and women who are earning their way and securing a good education.

It may be said with justice that the veterinary colleges themselves are not at this time fully prepared to give an education in harmony with the preparation outlined, but they will probably be able to adjust their work as rapidly as the preparatory requirements can be advanced.

If we search amongst the alumni of the various colleges it will be quite uniformly found that the most honorable and conspicuous positions are held by those who possess a liberal education.

If our current veterinary literature is examined it will be almost universally found that the meritorious articles emanate from those men who possess a good academic education.

Less than 50 per cent. of American veterinarians subscribe for any veterinary periodical, they purchase no new books, they attend no veterinary association meetings, they read nothing, they write nothing, they are *in* the profession, not of the profession. Almost without exception they are the men without academic education; they do not have it because they are either too lazy or too dull. Yet the colleges and the profession is responsible for them.

It is charged that those colleges demanding high entrance requirements are not well patronized by students and the charge is all too true, but the explanation does not lie in that alone or chiefly. High entrance demands are confined to State colleges or to those where the State has enacted laws making such requirements mandatory. The majority of these colleges have faculties greatly limited in numbers, handicapped by a want of practical experience, the buildings and equipments have generally been defective, their command of clinical material limited. Yet they are accomplishing a work destined to elevate and make better the veterinary profession, and as soon as the States conducting these institutions extend to them ample support, so that their college work may be made as good as their entrance requirements, the criticism will cease to have whatever weight it now possesses.

From the standpoint of the student all observation and recorded experience indicates that it is to his advantage that he acquire a liberal academic education before entering the veterinary or any other profession. If unfit to complete with credit a high school course, he is incapable of taking an honored place in veterinary practice. We speak of ours as a "learned" profession, but it cannot be so unless its members are educated. Admittedly a high academic education alone does not insure a successful veterinary career, nor does character or professional education. As stated at the outset, the candidate needs the three in ample degree. We observe technically highly educated veterinarians who are failures for want of character or good common sense. On the other hand, it is claimed that men have succeeded as veterinarians who have had very poor academic preparation. But if those men are carefully studied it will be found that they have an equivalent knowledge which we should always accept. If the daily life of a man places him in constant contact with educated people, if he habitually reads good literature, observes and studies everything about him, he acquires a liberal education even though his school attendance may have been insignificant, and the fact that he has so acquired it, has become self-educated, is an indication of inherent vigor and power in him. It is the

same with the course in a veterinary college; the worst diploma mill may occasionally turn out a man of force and efficiency, but the college did not make him; it merely failed to keep him from making himself. Schools, colleges and universities are not maintained because they are the only avenue by which men may get an education, but that they are by far the most efficient, prompt and economical. In reality the successful veterinarians are very largely self-made, viewed either academically or professionally.

We hold that the colleges owe the public more efficiently educated men. In some callings a man learns his work through direct experience, but in doing so spoils little, if any, material and merely accomplishes a small amount of work as an apprentice. When a man is graduated in veterinary medicine he should be prepared at once to do efficient service, but our practice has been to give the student some of the so-called fundamental principles and then turn him loose to learn the practical part at the pain of his patients and expense of their owners. One of the chief means for overcoming this defect is by securing higher preparatory education, in order to enable him to better grasp his professional studies.

Opinion may vary and surroundings may change the advisability as to where and how this preparatory education should be obtained. The New York law permits students to enter with conditions provided they are passed off before the beginning of the second collegiate year. The plan has advantages and disadvantages. It offers advantages to mature and capable men who fall but little short of the requirements and can make them up without serious hindrance to the efficiency of their work during their first year. If we regard preparatory education as an enabling provision through which he is better prepared to grasp his professional subjects, entering on condition destroys the value of such education at the very point where it is the most essential, for the first year poorly done is a handicap not removed during a college course. If the conditions are heavy, the man who can overcome them and do his year of collegiate work well is a Hercules. Usually, in our experience heavily conditioned men stag-

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ger along in their first year many of them fail, are forced out of college and turn to colleges demanding low or no preparatory education, or remaining, rarely recover during the entire course to a sufficient degree to do their work in a creditable manner. Except in case of very light conditions or in extraordinary instances our advice is against registration with conditions.

One method of securing the desired academic education is that adopted by the Kansas and Washington institutions where they are taken as a part of the prescribed college course. To this no very great objection appears on the surface. The State furnishes the education, both academic and collegiate, and if it can do it better or cheaper in the college than in the high school there can be but little objection. A minor criticism is that such a plan gives the appearance of a four-year professional course, when as a matter of fact, it is shorter in veterinary study than some of the three-year colleges. A study of their curriculum reveals the true condition and places them among the three-year colleges with high entrance requirements where they properly belong.

In the New York scheme elementary chemistry may be counted as a preparatory study for entrance or taken in college and count towards graduation or serve the double purpose of counting in each place. It is a required veterinary study and candidates for State license must pass an examination in it before the State Board of Examiners. Nevertheless, elementary chemistry properly belong in a preparatory and not in a veterinary course. On the other hand, physiologic chemistry, the chemistry of foods, medicines, poisons, etc., have a direct and important place in veterinary education, and the elementary study must serve as a basis. Elementary chemistry is of scant value as a preparatory study, aside from affording a liberal education, except it is followed by the applied subjects. The same may be said of elementary botany and zoology. They lose their direct value as enabling studies unless the professional courses use them as a basis for distinctively veterinary branches. High preparatory requirements become largely a farce so far as they form a founda-

tion for veterinary study unless the studies for which they form the logical basis are given in a corresponding manner, but the high requirements still retain a value in contributing toward a liberal education and indirectly enable the student to more successfully pursue his professional education and career. The solution of the problem of higher preliminary education for veterinary students is not easy of accomplishment.

The first step in securing any reform is a frank acknowledgment that it is necessary. If veterinary colleges would openly and earnestly advise intending students that it would be greatly to their personal advantage to secure a good academic education before entering college it would go far towards solving the problem. If each and every college would say as much in their announcements about the advantages of a good preparatory education as they do to laud the excellencies of their buildings, courses, equipment and faculty they would aid the advancement of veterinary education very greatly.

If this association could bring about a general agreement that each college taking part in its deliberations should recommend through its official publications that the intending student should first secure a good academic education before entering college it would exert an excellent influence, even though such colleges continued to accept them without the preparation advised.

Our most influential force in this matter is the American Veterinary Medical Association. If we could induce this association to approve a plan for the preparatory education of veterinary students which would be enforced by the granting or refusing of membership to the alumni of the college it would go far toward the correction of the evil. A plan is now in force by an association of Eastern universities by which entrance examinations are held at stated intervals by a board representing the association and the results of such examinations are accepted alike by all universities belonging to the association, so far as they relate to a given subject. This does not prevent each university from admitting students upon examinations conducted by the individual institution.

The American Veterinary Medical Association could demand that a certain quantity and quality of preliminary education of veterinary students should be required by colleges in order that their alumni shall be eligible to membership, or it might enact a rule that only such persons who as students have passed a prescribed entrance examination shall, as alumni, be eligible to membership in the association.

A change from the present chaotic condition could be only gradually made. A start could be made by requiring a reasonable examination in English, to be followed as soon as judicious by a more rigid test, after which there could be added some of the sciences or a working knowledge of German or French, and finally after some years, the full preparatory education suggested could be demanded. Such a plan would bring about a gradual change without serious injury to any well-meaning college, while it would appeal to the profession and public through the increased efficiency of the graduate. Presumably some low-grade colleges would continue just as correspondence schools and diploma mills now exist, but their influence is very slight and need not be seriously considered. In order to make such a plan effective it would be advisable to first have the support of a majority of the reputable veterinary colleges or of those colleges having a majority of the veterinary students.

It might not be essential to require that *all* students entering such colleges should pass such an examination by a central examining board but if it were required of a majority of these it would create a sentiment in favor of such requirements which would act powerfully toward extending the rule and making it universal for the college. It would soon be found that the men with good preparatory education were the successful students.

In such a plan, a uniform minimum requirement could not be permitted to act upon those colleges already exceeding such demands. Those colleges already requiring high entrance education would necessarily be unaffected by this rule, except in some particular they fall short. If the requirements in English should be advanced beyond the demands of New York, those colleges

would necessarily become affected by the rule; if German or French is required by the general rule, then New York would need comply or lose place in the association.

We believe that the time for action has come and that this association should recommend to the American Veterinary Medical Association some prudent plan for advancing the matriculation requirements in veterinary schools, that the advance should be prompt and decisive, but not revolutionary.

THE REVIEW takes much pleasure in announcing the marriage at Billings, Mont., Dec. 3, 1907, of Dr. George E. Thomas, Bureau of Animal Industry, to Miss Winifred Jansen, of that place. Amid showers of rice they left for a three weeks' honeymoon, to be spent at the Doctor's home, at Seneca, Ill. Dr. and Mrs. Thomas will be at home in Billings, Mont., after January 1, 1908.

VETERINARY FRATERNALISM.—“Frats” are now a reality in American veterinary colleges. The Alpha Psi Fraternity under national dispensation has chartered three chapters and more may follow. These are the Alpha Chapter of the New York State Veterinary College, the Beta Chapter of the Veterinary Department of the Ohio State University, and the Gamma Chapter of the Chicago Veterinary College.

HORSE TALK VIA TELEPHONE—ANIMALS MADE PART OF CIRCUIT AT FORT LEAVENWORTH.—An ingenious device by which the horse is made a part of an electrical circuit has been reported to the War Department by Lieut. A. C. Knowles, 130th Infantry, at Fort Leavenworth, who has been making tests intended to permit telegraphic and telephonic communications between mounted operators. This will permit the mounted operator to transmit messages to his base whenever necessary without stopping his horse, and is accomplished by placing a small piece of copper wire (properly connected to the telegraph or telephone instrument), against the animal's body, thus completing a ground connection through the horse's hoofs. The tests were made over all kinds of ground, and conversation was carried on without difficulty between two operators separated by five miles of wire, the horses standing in the grass.

UNHEALTHY MILK AS A FEDERAL PROBLEM.

BY D. ARTHUR HUGHES, PH. D., D. V. M. (CORNELL), INSPECTOR SUBSISTENCE DEPT., U. S. ARMY, CHICAGO, ILL.

We have heard so much of late of what has been undertaken in parts of the country, more particularly in certain widely separated States or cities, to assure a healthy milk supply, that an attempt to view the subject as a national problem, inasmuch as milk is one of the necessities in the national food supply, may be worth while. There are few currents of general thought that vitally concern the people as a whole, which do not find their way, sooner or later, to Washington. Very few large problems like this of a healthy milk supply escape the attention of the General Government. The point for us to notice is, that the scientists at Washington have recently become deeply involved in the subject of "Unhealthy Milk as a Federal Problem," and that it is being attacked by the veterinary authorities and the medical authorities alike. This motility was, in part, brought about by:

I. TYPHOID FEVER IN THE CITY OF WASHINGTON.

Despite its beautiful homes, winding avenues, air of comfort and cleanliness, Washington has a notoriously high death rate. Typhoid fever, always called a "filth disease," has, with hideous regularity, claimed far more victims there annually than in most cities of equal size in the country. As typhoid is usually considered to be a "water-borne" infection, the authorities have from year to year, directed their attention to the Potomac river, the source of water supply for the Capital. With the regular recurrence of the disease medical advice finally culminated in the appropriation by Congress of \$3,468,405 for a slow sand filtration plant. The plant, a model of its kind, was constructed under the supervision of the Engineering Corps of the United States Army, and the city was supplied with filtered

water by November, 1905. Nevertheless the following summer, July, 1906, typhoid broke out with the same devilish regularity and carried off 866 persons before the middle of October, that year.

In their extremity and bewilderment, the city Board of Health petitioned the Surgeon-General of the United States Public Health and Marine Hospital Service to co-operate in making a study of the source of the infection. Copies of the publications of this department of the public service have been periodically coming to my private library for a number of years. But none have equalled in public interest, nor in my opinion, in actual merit, the "Report on the Origin and Prevalence of Typhoid Fever in the District of Columbia,"* which covers the investigation of the disease undertaken in 1906-1907. During the summer of 1906 "almost the entire force of the Hygienic Laboratory concentrated its energies on this problem." The report shows that the investigations on the origin of typhoid in the city included a sanitary survey of the Potomac watershed; an exhaustive epidemiological study of the 866 cases of the disease occurring in the District of Columbia between June 1 and October 31, 1906, daily chemical and bacteriological examinations of the water supply; a special study of the pumps, wells and springs in the District; and also of bottled waters sold in Washington; an inspection of the dairies and laboratory examinations of the milk supply; and inspection of the ice factories; chemical and bacteriological examinations of a number of samples of ice, as well as the water of the original point where the ice was made; and the making of blood cultures, diazo and Widal reactions for practicing physicians in the District. The question of shell fish, salads, fruits and other raw food products, in relation to the disease, was studied. Further, special attention was directed to the communicability of the disease from person to person, by direct or indirect contact. The relation of sewers to wells was investigated, as well as that of privies, and the question of

* Treasury Dept., Public Health and Marine Hospital Service of the United States, Hygienic Laboratory Bulletin 35.

flies and other insects as carriers of the disease received attention. The bathing beach and public market were inspected from time to time. Finally, many specimens of feces were examined to determine the possible relation of animal parasites to the disease.

The report on these investigations, which contains over 360 octavo pages and numerous most skillfully drawn maps, and which is doubtless one of the best monographs of the kind ever written, does not represent the completion of the work. Instead of that, by a process of elimination, counting out the many lines of investigation which have proven fruitless in the search for the origin of the infection, the men of the United States Public Health Service are concentrating their energies along those lines where there is hope of discovering the mode of infection. The summary of the findings, therefore, remains for the future. Meanwhile the continuance of the work may well be a source of satisfaction. For—

II. THE CRUX OF THE TYPHOID SITUATION IS PROBABLY THE UNHEALTHY MILK VENDED IN THE CITY.

To the veterinarian, the most interesting chapters in the report are those on "The Milk Problem" and "Milk and Other Dairy Products." In the chapter on "The Milk Problem" we are informed that: "Three separate milk outbreaks occurred in Washington between June and November, 1906. Eighty-five of the 866 cases of typhoid fever studied during this time were attributed to the use of infected milk. The source of the infection was traced to cases of the disease at the city dairy, or at the dairy farm. Quite probably other cases contracted their infection from milk; but the number of such cases must remain problematical. In at least two cases employees of the dairy lived in houses in which cases of typhoid fever were being treated, and in other ways the relation between the disease, the infection and the milk was found to be very close."* This fact, and the interest it aroused, seems to have turned all eyes to the

* P. 20, Hygienic Laboratory Report 35 (*vid. ante*).

milk supply. The evidence of this is the publication, June 22, 1907, by the Department of Agriculture of Circular No. 111, of the Bureau of Animal Industry, on "Sanitary Relations of the Milk Supply"; moreover, by the issuing by the Public Health and Marine Hospital Service of the Treasury Department, to be sent out to State and local health officers and other sanitarians, of a circular letter requesting facts on epidemics among human beings, in which the infection is traceable to unsanitary milk.

The purpose of the publication of Circular No. 111, apparently, was to give advice, based on the Washington experience, to whatever persons throughout the nation were interested, on the dangers lurking in unsanitary milk and the precautions necessary to obtain a healthy commodity. The importance attached to unhealthy milk and the gravity of the situation in Washington, as it was, are alike attested by the words of the introductory note to the published Circular No. 111: "The Commissioners of the District of Columbia have appointed a committee or conference composed of scientists, physicians, veterinarians, milk producers and dealers, attorneys and business men, to consider and report on the local milk supply, to advise what steps should be taken to improve it, and *to suggest legislation to that end.*"

The purpose of sending forth the circular letter and blanks from the Surgeon-General's office of the Public Health and Marine Hospital Service is to accumulate information and later to publish it on epidemics, of whatever sort occurring among human beings in the United States which originated in or was spread by an unsanitary milk supply. The blanks call for the following facts: Name of the disease; date; place, number of cases; number of deaths; number of cases among milk consumers; circumstances on outbreak; location of original case or cases causing outbreak; manner in which milk was infected; reasons for believing milk carried the disease; reporter and reference. The work of massing these facts is undertaken by direction of President Roosevelt and the Secretary of the Treasury, Mr. Cortelyou, a statement which has much significance. Accordingly, I need ask no pardon for reprinting the letter here:

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CIRCULAR LETTER.

TREASURY DEPARTMENT,
BUREAU OF
PUBLIC HEALTH AND MARINE HOSPITAL SERVICE,
Washington, August 28, 1907.

To State and Local Health Officers and Other Sanitarians:

In the study of the sanitary milk problem undertaken by this Bureau at the direction of the Secretary of the Treasury and the President, it is desired to make a compilation of all authentic cases in which disease has been spread by milk. This will include cases where milk has been the undoubted means of carrying an infectious disease to one or more persons. Whereas, in the light of present knowledge, the greatest interest centers in cases of typhoid fever, diphtheria and scarlet fever spread by this means, yet *the report of other diseases carried in this way is also desired.*

It is believed that although many epidemics caused by milk have been reported in the printed reports of boards of health and in the medical journals, a greater number known to medical men have not been so reported.

If you will co-operate by reporting to this Bureau upon the inclosed form, or otherwise, any cases of disease or epidemics spread by milk of which you have knowledge, it will be greatly appreciated.

An addressed envelope, which will require no postage, is inclosed for the return of any report you may make. * * *

WALTER WYMAN,
Surgeon-General.

III. OTHER WORK OF THE FEDERAL AUTHORITIES TO FURTHER
THE HEALTHFULNESS OF THE GENERAL MILK SUPPLY.

Nor is the present activity on the unhealthy milk problem, on the part of the Government, the first work undertaken. As far back as 1903 the Dairy Division of the Bureau of Animal Industry issued a bulletin * on "The Milk Supply of Two Hundred Cities

* Bulletin No. 46, of the Bureau of Animal Industry.

and Towns," written by H. E. Alford and R. A. Pearson (a brother, I believe, of Dr. Leonard Pearson), accompanying it with a paper entitled "Market Milk: A Plan for Its Improvement." The first paper is similar to bulletins issued, between 1900 and 1906, by the Bureau of Chemistry of the Department of Agriculture to point out the amazing variety of the local laws and regulations on "Pure Foods" which were in existence prior to the Federal Food and Drugs Act of June 30, 1906, an act which is in some respects, revolutionizing the food industries of the country. The paper of Alford and Pearson, to my mind, tends to show the propriety of some form of Federal supervision of the interstate traffic in milk and the necessity for some form of Federal milk regulations.

To be added to these productions of the Dairy Division are the investigations of the Pathological Division of the same Bureau, more particularly those on tuberculosis, which have strengthened the argument against the Koch school, and emphasized the criminality of slacking sanitary precautions against animal tuberculosis. The first bulletin of this sort published by the Bureau of Animal Industry, issued June 10, 1907, by Drs. Mohler and Washburn, entitled "A Comparative Study of Tubercle Bacilli from Varied Sources," closes with a warning against the meat and milk of tuberculous animals, couched in these words: "Sufficient evidence, in our judgment, has been adduced to warrant the adoption and enforcement of sanitary measures against the use of the milk and the meat of tuberculous animals, and to make it advisable to eliminate all tuberculous cattle from the herd or to *sterilize the milk.*"

IV. UNHEALTHY MILK AS A PROBLEM OF INTERSTATE TRAFFIC.

There is no question that the lines of commerce, along which much milk must go to reach New York, Chicago, Boston or Washington, as well as the points from which it is likely to start, make traffic in its "interstate trade." Milk vended in these cities reaches the trade center either by waggon or by train. Milk trains for New York gather the supply from New York

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State, New Jersey, Pennsylvania and Connecticut; those for Chicago, from Wisconsin, Indiana and Michigan; those for Boston from Rhode Island, Connecticut and probably New Hampshire; those for Washington from Virginia and Maryland. We may be able to detect from what point any of this milk comes, and criticise the product freely. How, pray, are we to be sure what milk was originally used in the various brands of the fluid contained within hermetically sealed cans sold at the retail grocers' shop on our street corner?

The office of the Public Health and Marine Hospital Service draws attention to the fact that these diseases which they mention—scarlet fever, typhoid fever and diphtheria—are not animal diseases, but that infection of the milk with their germs may take place at any moment, from the time of leaving the udder up to the moment of consumption. The circular letter, which we print with this article, exhibits that the United States Health Service is reaching out further to get exact knowledge of all undoubted epidemics in the human subject traceable to contaminated milk.

There are two ways of looking at the question of a healthy milk supply for largely populated centers: As a local problem; as an interstate problem.

As a local problem, in order to avoid epidemics, the germs of which may be milk borne, the solution would be to require the pasteurization of all milk to be sold in the city at a local pasteurization plant somewhere within the municipality, before it could be vended; which, indeed, is the plan proposed by the Washington authorities. But this, a good solution as it may be from the scientific points of view has its objections. It places a heavy burden upon the local milk dealer; it causes considerable delay locally; it lessens profits; it exonerates the producer, unreasonably burdens the retailer, and is likely to cause an outcry from the consumer.

The responsibility for the supply of unhealthy milk belongs, in great measure to the producer and the problem is largely one of interstate traffic. As far as the diseases in question—typhoid, diphtheria and scarlet fever—are concerned, the contamination

of the milk supply in Washington in 1906 caused 10 per cent. of the deaths—a contamination which took place in all probability, the testimony shows, at the point of origin, the dairy farm; something which may often occur. As far as other diseases communicable through the milk to the consumer are concerned, such as tuberculosis and anthrax, the question is not so much one of the contamination of the milk, but the disease of the animal. The responsibility for the supply of unhealthy milk from such a source, therefore, usually should be placed, in all conscience, upon the owner of the diseased animals who produces the milk. The question, in the main, resolves itself into a question of veterinary sanitary science and sanitary police work along interstate lines.

V. INTERSTATE TRAFFIC IN UNHEALTHY MILK FROM BADLY-DISEASED ANIMALS IS AS GREAT AN EVIL AS INTERSTATE TRAFFIC IN DISEASED MEAT AND MEAT FOOD PRODUCTS AND SHOULD BE PROHIBITED.

What is really necessary to place a curb on this villainous trade in unhealthy milk, is a periodic veterinary inspection of all animals, the milk of which is to go into interstate traffic, with authority to exclude for cause; permanent tagging or branding of all such animals for detective purposes; the sealing of containers, under the supervision of the assistants of the veterinary inspector, and certification of the milk. To say nothing of diseases communicable to man through contamination of the milk after it leaves the udder—such as typhoid and scarlet fever and diphtheria—the traffic should be necessarily curbed because of the infectious and toxic conditions directly communicable to man from animals, through drinking unhealthy milk of cows or goats. The recent investigations on the transmissibility of tuberculosis add more and more to the ever-accumulating evidence of the danger of animal tuberculosis to man. We should remember that much tuberculous milk gets into the cities by way of the milk trains. Dr. A. D. Melvin informed us, at the forty-fourth annual meeting of the American Veterinary Medical Association, last sum-

mer at Kansas City, that animal tuberculosis was greatly on the increase and that the Government may have to set up a quarantine some day against certain States where the disease is now running riot. The magnitude of the animal tuberculosis question gathers something when we remember that not all tuberculous milk goes to hogs, which so commonly show lesions of tuberculosis when they reach the abattoirs. Some of this raw, tuberculous milk; nay much, goes into the interstate trade. Other infectious diseases and toxic conditions, readily directly transmissible from animals to man by drinking contaminated milk, deserve our attention. Yet they are as a mole beside a mountain compared to this of animal tuberculosis. Veterinary supervision of milch herds, with the exclusion of milk from undesirable animals from the interstate trade, necessary as it is, would put a curb on the traffic. At best, however, it would be only a temporizing measure. Stamp out animal infections and the question of a healthy interstate milk supply, as far as direct transmissibility from animals to man is concerned, would settle itself.

THE official station of Dr. William Thompson, Bureau of Animal Industry, has been changed from Mayaguez, to San Juan, P. R.

AN IMMENSE FIELD FOR PROGRESSIVE VETERINARIANS.—At present there is but one veterinarian holding official position in the New England States having charge of the laws relating to contagious diseases of animals. In Maine there are three cattle commissioners, all laymen. In New Hampshire there are three, one of whom is a physician and the other two laymen. In Vermont the head of the veterinary sanitary service is a former deputy sheriff. In Rhode Island the organization having charge of such work as falls to a live-stock sanitary commission is composed entirely of laymen, and in Connecticut this work is in the hands of a farmer. The single redeeming feature in respect to all the work in New England is the brilliant work that is being done in Massachusetts by our distinguished colleague, Dr. Austin Peters, Chief of the Cattle Bureau of the State Board of Agriculture.

PURCHASE OF COWS FOR SLAUGHTER SUBJECT TO POST-MORTEM INSPECTION.

BY O. E. DYSON, D. V. S., CONSULTING VETERINARIAN TO THE PACKING
FIRMS OF CHICAGO, CHICAGO, ILL.

An address delivered before the annual meeting of the Inter-State Association of
Live Stock Boards, at Richmond, Va., Sept. 16-17, 1907.

Through the courtesy of your Secretary, I have the pleasure of being with you to-day, and while I consider it a great honor to have received his request to address you upon the subject allotted me, that of the "Purchase of Cows for Slaughter Subject to Post-mortem Inspection," I also realize the fact that he had a definite object in view when the invitation was extended, namely, that your association, acting as guardian of the live stock interests of the various States here represented, desired to sit in judgment upon the facts relating to the cause of some difference of opinion regarding the disposition and purchase of dairy cows for slaughtering purposes.

The most serious problem now confronting the American packer who is conducting his establishment under the United States Meat Inspection Department is the losses sustained as a result of condemnation on account of disease. Tuberculosis being the principal cause of the losses sustained, as it constitutes at least 95 per cent. of the total post-mortem condemnations of both cattle and hogs. For that reason, also that the disease is rapidly on the increase, I am sure that you in your official capacity are vitally interested and anxious to take such steps as would check a further spread of the disease and lead ultimately to its eradication.

That this could be accomplished by concentrated and well-directed efforts on the part of your association, through co-operation with Live Stock Exchanges and the United States Department of Agriculture, there is no doubt, owing to the fact that tuberculosis comes well within the scope of most State and

Federal laws enacted for the purpose of controlling contagious and infectious diseases of domesticated food animals. That being the case, it would only seem necessary to reason from cause to effect, and exercise your authority as Live Stock Commissioners by acting in accordance with the law, in order that the best interests of a large majority of live stock producers might be served.

Much to my surprise, however, no definite policy toward the eradication of tuberculosis by either State or Federal authorities has up to this time been inaugurated, each apparently being unwilling to take a decisive stand or pursue an aggressive policy toward eradication of the principal disease, which, in the opinion of the officers of the United States Department of Agriculture, and most people, renders meat inspection imperative. Notwithstanding the law, the Department, and possibly many State boards, consider it necessary to await the awakening of the people, who have little conception of their danger as compared between the milk of an infected dairy cow and flesh of tubercular animals; therefore, delay is considered necessary, in order, perhaps, that a proper degree of public sentiment may be aroused before any definite action is taken. Just how long the necessary procedure will take, I presume no one would care to predict, neither would it be necessary to estimate or take into consideration the increase in the number of animals that would become infected, or the danger to public health through the consumption of milk from tubercular cows in the meantime, or that during the awakening the result of post-mortem condemnations incident to the delay would amount to millions of dollars, as a tribute to the lack of initiative on the part of those upon whom the responsibility now rests.

If, as the United States Meat Inspection Department now holds, the flesh of the tubercular animal is dangerous to public health, what is the comparative risk run through the consumption of raw milk by thousands of infants and children in contrast to cooked and thoroughly sterilized meat products consumed by

adults? And why should heavy losses be sustained by packers and the expense of meat inspection be borne by the Government, when a greater danger, and the primary cause leading to meat inspection, is being overlooked, or ignored, awaiting the uprising of a public demand from a sleeping populace, which no one had the temerity to awaken?

The cause of tuberculosis, thanks to Professor Koch, has long been demonstrated, and its eradication is not a chimerical proposition in any sense of the word, for the reason that tubercle bacilla never develop spontaneously, infection always depending upon a pre-existing case; consequently destruction or isolation of affected animals effectively removes the cause, a sane and practical principle of modern hygiene. Therefore, a united effort on the part of State and Federal authorities toward eradication of tuberculosis upon a well-established principle would at least serve to arouse the public to their danger, or there being no danger, would relieve the minds of those who now contend there is.

Can it be possible that the dairy interests of this country, at the expense of public health, are to be allowed to dictate the policy of the State and Federal governments in the matter of eradicating tuberculosis? If so, then it would be useless to waste time and energy in that direction.

In this connection, as pertinent to the question at issue, may it not be asked why milk as a food product has never received any consideration by the enactment of State or Federal laws requiring certification of its purity and wholesomeness when offered for sale, when the fact is generally admitted by recognized authorities that the consumption of milk from cows affected with tuberculosis is far more dangerous than consumption of the flesh of an affected animal. Such being the case, can it be considered reasonable or just that those responsible for the passage of the Meat Inspection Law should ignore the primary cause of the need of such a law by absolutely disregarding the health and products of the dairy cow and the notorious fact that

she, being affected with tuberculosis, is exclusively responsible for disseminating the disease among others of her own species, and at the same time being a general distributor of the infection to hogs, not to mention the unsuspecting public at large? With this fact in view, what, in the name of common sense, is the use of State and Federal governments making experiments and studying any disease (and especially tuberculosis) from the standpoint of contagion or infection, if the resulting knowledge of positive character cannot be applied by the way of preventing a further spread of the disease and lead ultimately to its eradication, or partial control at least?

The question of buying dairy cows subject to inspection, that has recently been agitating the minds of the packer, the shipper and the commission man, serves to illustrate and indicate the need of the establishment of some definite policy toward the eradication or control at least of tuberculosis. Viewing the situation from the standpoint of one with no financial interest involved, I can conceive of no particular or lasting benefits to be derived by the purchase of dairy cows for slaughter subject to post-mortem inspection, other than a saving upon the carcasses condemned. Slaughter and condemnation, of course, end the affected cow's career as a general distributor of infection, but in no way indicates the locality or premises where, possibly, she has for years been responsible for the infection of many of her own species, and perhaps hundreds of hogs, which have been sold to packers, only to have their carcasses condemned on account of tuberculosis, resulting from the infection possibly derived from a single cow, whose owner may have had no occasion to suspect her infection; and who knows but what milk from the identical cow in question has been supplied to infants and children, with the possible result of their infection and death on account of tuberculosis.

Now, in the face of all the facts that can be brought to bear upon the question of transmissibility of infection from animal to man, is it reasonable or rational to ignore the dairy cow as a

primary source from which a disease that causes one-third of the total deaths in this country may be in part derived? The first step, however, in the matter of attempting to eradicate or control the spread of any contagious or infectious disease would naturally be to locate the point from which the contagion or infection spreads. Therefore, with that object in view, I have endeavored to formulate a plan which, in my opinion, seems feasible, and one that would tend to at least assist in solving the problem that now confronts every one interested in the future welfare of the live stock interests, not to mention the welfare of mankind in general. The suggestions, briefly stated, are as follows:

1st. There should be a mutual co-operation between the United States Department of Agriculture, Live Stock Exchanges, State Boards of Live Stock Commissioners and meat packing interests.

2d. As it is only by making diseased cows unprofitable and healthy cows more profitable that any hope toward eradication of tuberculosis in dairy cows may be had, laws, both State and Federal, should be passed, prohibiting the sale within the State or the interstate shipment of milk or milk products from cows, unless they have been tested with tuberculin and found to be free from tuberculosis. The test should at least be repeated semi-annually. In order to prevent a scarcity of milk supplies as a result of the enactment of such laws, a provision should be made requiring the pasteurization, and sale as such, of all milk products derived from untested cows.

3d. All interstate shipments of milch cows or cattle for breeding purposes should be prohibited by State and Federal laws unless accompanied by a certificate of health and tuberculin test chart, issued under oath by a qualified veterinarian. The certificate should bear a date of not more than thirty days preceding the shipment. Each certificate should be made in duplicate, one copy to accompany the shipment, the other to be filed with the State Veterinarian of the State to which the shipment

is made. Such a provision, in view of an attempt to eradicate tuberculosis from cattle, is absolutely necessary, for the reason that many unprincipled breeders of pure bred stock, in the absence of such laws, are doing more to disseminate the disease in this country than all the other forces combined, and so long as they are able to dispose of diseased animals at remunerative prices without interference, the practice will continue. Provision should also be made by managers of Live Stock Expositions, in the absence of such a law, to prevent the exhibition or the awarding of premiums to diseased animals.

4th. All tuberculin tests should be administered by a qualified veterinarian, who shall be required by law to file, with the State Veterinarian of the State in which the test was made, a duplicate record of all such tests. All cattle reacting to the tuberculin test should be branded with a permanent and uniform brand, conspicuously located and easily recognized. Their isolation, if kept for breeding purposes, should be required by proper and perpetual quarantine regulations.

5th. All cows with well-developed udders and all bulls offered for sale at any public stock yards should bear a numbered tag and be accompanied by the shipper's manifest, showing the identity of the former owner and premises occupied by the animal for a period of three months previous to shipment to market centres; said manifest to be delivered by the shipper through his commission firm to the purchaser. With a view of securing their co-operation in the matter of eradicating tuberculosis, live stock commission firms should be requested to refuse to handle or offer for sale—except as subject to post-mortem inspection—all such cattle as do not bear a proper mark of identification.

6th. In consideration of such marking, all animals offered for sale at market centres should be purchased and paid for at their market value for slaughtering purposes, and in the event of condemnation of the carcass, the former owner and premises from which the animal was derived should be established by the

United States Meat Inspection Department by means of the tag number and shipper's manifest, notice should be given by the United States Department of Agriculture to the State Veterinarian of the State involved in the transaction. Upon receipt of such notice, it should be the duty of such State Veterinarian to investigate the occurrence, by placing in quarantine the premises from which the animal came until such time as the owner consents to a tuberculin test of all bovine species on the premises. In case of finding infection, all cattle reacting to the test should be branded, and either isolated by quarantine for breeding purposes or, together with all swine upon the premises, should be required to be shipped in quarantine to market centres and sold subject to inspection. In this way only the careless and indifferent stock raiser or dairy man would be affected, and the owner of healthy stock would no longer be required to pay tribute to the cause of disease for which he was in nowise responsible, through a general depreciation in the price of live stock as a result thereof.

7th. As public health is a State as well as a national liability, it should be safeguarded, partially at least, at the expense of each. A full price, however should not be paid for diseased animals slaughtered and condemned on account of tuberculosis, as that would tend to encourage a continuance of the present practice of carelessness and negligence on the part of owners, which is now so largely responsible for the constant increase and spread of the disease. In view of this fact it would, therefore, seem just and equitable for the State and Federal governments to apportion and pay not more than one-half of the value of the animal for slaughtering purposes; the owner, by collecting for the hide and offal of the condemned carcass, would then be well repaid for the loss of a diseased and dangerous animal, while at the same time public health and live stock interests in general would be safeguarded from danger, or the spread of infection from that source.

8th. Last, but not least, is the general need of educating the public mind to the danger to health through the milk supply from cows affected with tuberculosis. Breeders and dairymen will necessarily have to be forced to comply with laws enacted as a result of public education.

In proof of the fact that the future welfare of the live stock interests of this country demands your immediate attention in the matter of eradicating contagious and communicable diseases among live stock, it is only necessary to state that the losses now sustained by packers as a result of condemnations by the United States Meat Inspection Department on account of tuberculosis alone amounts to more than three million dollars per annum, and, as a result of the constantly increasing spread of the disease, an increase of 25 per cent. per annum would be a conservative estimate of the future losses under existing conditions, which could be attributed chiefly to inactivity on the part of the State and Federal authorities in whose care the destiny of the live stock interests is entrusted. That there would be opposition to any effort on your part to eradicate tuberculosis there is no doubt, but to those who take the initiative and carry into effect a practical solution of the problem, there will be erected in the minds of the thinking public a monument that time will never efface. That now is the time in which to undertake the task before you cannot be denied, and I hope to see the day when every member of the various State boards present will be the recipient of honor and praise for wise and vigorous action in the cause of humanity and the live stock interests, by taking an active part in the eradication of tuberculosis.

"I WOULD not think of trying to practice without the REVIEW. It grows better each year."—(*Dr. O. L. Boor, Muncie, Ind.*)

THE Government of Costa Rica desires to secure the services of a thoroughly capable veterinarian who is conversant with the Spanish language.

"THE EFFECT OF THE TUBERCULIN TEST UPON LACTATION."*

BY S. H. GILLILAND, V. M. D., M. D., AND E. L. CORNMAN, V. M. D.,
MARIETTA, PA.

In compiling this paper the writers had in mind the oft-repeated statement by herd owners and not a few veterinarians that the tuberculin test has much influence upon decreasing the milk yield, and in some sections this argument is used by dairymen when a test is suggested.

Tuberculin is an intra and extra cellular product of the bacillus of tuberculosis. The extra cellular portion is obtained during the growth of the tubercle bacillus upon glycerine, beef broth, while the intra cellular portion is obtained by maceration and heat.

The tuberculin test after over fifteen years of use has come to be recognized as the only and best means of determining occult or hidden tuberculosis in cattle. Each day sees it grow more in favor as a means of diagnosing tuberculosis in man. In the city of Chicago within the last month Health Commissioner Evans has considered it wise to furnish tuberculin to the physicians of the city, to be used as an aid in the early diagnosis of incipient cases in man, in order that the same may receive proper advice and treatment.

The old tuberculin of Koch, which is the one used entirely for diagnostic purposes in cattle, does not contain any of the organisms of tuberculosis, and therefore the statement that it is capable of causing the disease is as impossible as spontaneous generation.

In a review of the literature we find very little information relative to the effect tuberculin has upon the products of

*Read at the 44th annual meeting of the American Veterinary Medical Association, Kansas City, Mo., September, 1907

the animals tested. A study upon the effect of tuberculin injections upon the milk of healthy and diseased cows was made by Dr. A. E. de Schweinitz¹ in 1896. These experiments pertained in particular to the variation in the amount of fat in the milk before and after the injections of tuberculin. In brief, the experiments showed little or no variation in the amount of fat in the milk of healthy cows, while the milk of reacting cows following the injections of tuberculin showed a decided decrease. The fever may have had some influence upon this decrease in the fat content.

Dr. Veranus A. Moore² states that in his experience with tuberculin there is a slight falling off in the quantity of milk in reacting animals during the test, which he believes is due to the rise of temperature.

The main object of this paper and the one in which the dairyman is most interested is the results upon non-reacting cows, and we have therefore in compiling our table based the figures upon the results of 500 non-reacting animals. In the case of reacting cows the figures are based upon the results of 48 animals. We determined the average daily number of pounds of milk the animal gave for the week preceding the test and then for each 24 hours following the test for four periods of 24 hours each. We also computed the average of these four periods, showing the gain or loss. It occurred to the writers that it would be wise to show the gain or loss for each 24 hours following the test in order that we might show just when there was a loss, if any. The loss might not have been evident had a week's average been taken.

(1) Tuberculosis Investigations, Bulletin 13, Bureau of Animal Industry, U. S. Department of Agriculture.

(2) Personal Letter.

A summary of the non-reacting cows shows the following results:

243 cows or 48.6% showed an average gain during the first 24 hours following the test of 1.15 lbs. of milk.

26 cows or 5.2% neither gained nor lost during this period.

- 231 cows or 46.2% showed an average loss during the first 24 hours following the test of 1.21 lbs. of milk.
- 189 cows or 37.8% showed an average gain during the second 24 hours following the test of 1.05 lbs. of milk.
- 14 cows or 2.8% neither gained nor lost during this period.
- 297 cows or 59.4% showed an average loss during the second 24 hours following the test of 1.39 lbs. of milk.
- 193 cows or 38.6% showed an average gain during the third 24 hours following the test of 1.15 lbs. of milk.
- 13 cows or 2.6% neither gained nor lost during this period.
- 294 cows or 58.8% showed an average loss during the third 24 hours following the test of 1.44 lbs. of milk.
- 192 cows or 38.4% showed an average gain during the fourth 24 hours following the test of 1.13 lbs. of milk.
- 14 cows or 2.8% neither gained nor lost during this period.
- 294 cows or 58.8% showed an average loss during the fourth 24 hours following the test of 1.4 lbs. of milk.
- 189 cows or 37.8% showed an average daily gain for the four days following the test of 1.05 lbs. of milk.
- 18 cows or 3.6% showed neither gain nor loss during this period over their daily average for the week preceding the test.
- 293 cows or 58.6% showed an average daily loss for the four days following the test of 1.23 lbs. of milk.

The annoyance of the injection and the temperature measurements is, no doubt, responsible for the high number of 58.6% of *non-reacting* cows which showed a slight loss in milk production following the test.

A summary of the reacting cows shows the following results:

- 5 cows or 10.4% showed an average gain during the first 24 hours following the test of .96 lbs. of milk.
- 1 cow or 2.08% neither gained nor lost during this period.
- 42 cows or 87.5% showed an average loss during the first 24 hours following the test of 2.5 lbs. of milk.
- 3 cows or 6.25% showed an average gain during the second 24 hours following the test of 1.1 lbs. of milk.

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- 45 cows or 93.7% showed an average loss during the second 24 hours following the test of 4.36 lbs. of milk.
- 12 cows or 25% showed an average gain during the third 24 hours following the test of 1.25 lbs. of milk.
- 36 cows or 75% showed an average loss during the third 24 hours following the test of 2.53 lbs. of milk.
- 17 cows or 35% showed an average gain during the fourth 24 hours following the test of 2.17 lbs. of milk.
- 3 cows or 6.25% neither gained nor lost during this period.
- 28 cows or 58.3% showed an average loss during the fourth 24 hours following the test of 2.24 lbs. of milk.
- 7 cows or 14% showed an average daily gain for the four days following the test of .62 lbs. of milk.
- 41 cows or 85.4% showed an average daily loss for the four days following the test of 2.46 lbs. of milk.

In closing we wish to acknowledge the assistance given us in compiling the figures by Mr. Carey, of Burnside Farm, and Mr. Barclay, of Soapstone Farm.

THE name of Dr. H. D. Gill, New York City, has been added to the list of practicing veterinarians registered and authorized by the Bureau of Animal Industry to inspect and test with mallein horses for exportation to Canada.

STATE EXAMINATION IN NEW JERSEY.—The State Board of Veterinary Medical Examiners will be in session at the State House, Trenton, N. J., January 24-25, 1908, for the examination of veterinarians for license to practice in that State.

A \$1,400 POSITION FOR THE RIGHT MAN.—The REVIEW is requested to recommend a veterinarian of ability and energy for the position of Deputy State Veterinarian to one of our Southern States. A man whose training includes a course at an agricultural college prior to his graduation in veterinary medicine is very much preferred, as the duties include animal husbandry work on test farms. The position offers opportunities for advancement and there are reasonably good prospects of a raise after a couple of years' service.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

SYMPTOMS OF RABIES IN LIVING DOG.

By JOHN A. McLAUGHLIN, D. V. S., Providence, R. I.

The function of the every-day practitioner is to diagnose disease, from symptoms presented in the living animal. I am investigating the *symptoms* of "rabies" in the living dog. I urgently request the help of all practitioners in the United States—in fact in the world, either by letter or in a veterinary magazine (the REVIEW preferred)—to tell me the symptoms they have seen with *their own eyes*, and whether such dogs had Negri bodies, and who was the bacteriologist who found them. I give the following cases:

Case 1.—About Sept. 12 (not sure of exact date); breed, pointer; age, did not inquire; symptoms, biting and tearing bedding, biting at stick, or anything pointed at him. To bring him near enough to shoot, showed him a piece of harness; he rushed at it and bit at it. Pointed revolver at head; grabbed my hand and revolver in mouth, but was *very careful* not to bite me. Head not examined. Night before, this dog got into horse's stall and attacked him; this horse had six or seven cuts—could not swear the lacerations were dog bites. Nov. 13 horse all right.

Case 2.—Sept. 15, 1907; breed, Boston terrier; age, about eight years; slight wound on pad of front foot about twice size of head of pin; do not think it ever drew blood; seemed excited. After examining wound under magnifying glass, he nervously grabbed owner's hand in mouth, but did not bite; owner chided him by slapping and telling him to stop; did not see dog again, but this is what I am told: Owner brought dog to stable for treatment next morning. One of the "cuffers" led him to a stall and chained him. As soon as dog felt himself chained, he became greatly excited; "cuffer" having been told by owner that dog would not bite, attempted to pet him and was bitten severely.

Negri bodies found by bacteriologists at Brown University. Cuffer underwent the Pasteur treatment. At Nov. 13 he is alive and well. Owner says dog was not bitten and never suspected rabies.

Case 3.—Sept. 16, 1907; dumb rabies; breed, Irish terrier; age, did not inquire. Symptoms: Dropped lower jaw, inability to swallow water, salivating profusely when attempting to drink. Head not examined. No history of bite.

Case 4.—Oct. 4. Was killed. Did not see dog, but investigated it thoroughly. He was a shepherd, about 14 months old. Was bitten about six weeks previous by strange dog; dog never heard of after. Negri body found by bacteriologists of Brown University. Owner was also bitten and underwent the Pasteur treatment.

Case 5.—Was bitten on cheek Oct. 1, 1907, by Case 4. This pup I had under my eye continuously. Breed, cocker spaniel; age, about four months; showed no symptoms until Oct. 21. Oct. 20 was taken into a neighbor's house and fed without my knowledge. Oct. 21, at 6 P. M. took a fit; etherized him and gave a dose of male fern, ether and castor oil. I believe it all went into his lungs. Oct. 22, was in a fitty condition all day; was informed he took a fit. Oct. 23, wagged his tail quietly; at 7 A. M. "fitty" condition had passed, but was informed he took another fit about 9.30 A. M. As he had had no movement of bowels and had showed symptoms of "stoppage," I gave him an injection of two quarts of warm water, which brought away nothing; also gave two ounces olive oil. Oct. 24, more oil and another injection of two quarts warm water, which brought away a small amount of soft yellowish fæces. Oct. 25, more oil and another similar injection, which brought away some hard fæces. Offered him some meat, but he seemed unable to swallow; cut meat very small and he ate it; was very weak, but showed no nervous symptoms whatever; but was coughing; oil choked him. Oct. 26, same treatment; more hard fæces, coughing worse. Oct. 27, died. Oct. 28, post-mortem: Pharynx and larynx healthy, but contained oil; trachea contained oil and some froth; bronchi froth and oil; lungs were of a mottled brown color, and sections through them showed them filled with a frothy liquid. Stomach all right, contained a few oats; he had evidently eaten a small amount of horse manure. Intestines, externally showed patches of yellow; internally, the small intestines had a yellowish slimy material for one-third of its length and inflamed in long streaks. About 12

inches from ilio-cæcal valve the small intestine was dilated for about 6 inches, the walls very thin, and dark in color (externally), while internally the entire dilation showed a bloody mucus and very small amount of fæces. Heart, kidneys and liver on superficial examination appeared all right. Negri bodies found by bacteriologists of Brown University.

Case 6.—Oct. 15, 1907, dumb rabies; breed, Boston bull; age, one year. Symptoms, dropped lower jaw; profuse salivation when attempting to drink; an inability to swallow water. Could detect no symptoms of nervousness; he had absolutely no nervous symptoms that five veterinarians could detect, outside of the dropped jaw, inability to drink and slobbering when he attempted to drink. I offered him about a teaspoonful of raw Hamburg steak; he licked it off floor and swallowed it. Oct. 16, symptoms same, except skin of neck was very sore from fighting against being chained up during night. Dr. Chorlton, V. S., who was with me, lifted him in buggy and we drove to Brown University and showed him on campus to Professor Gorham, the bacteriologist, who, with his assistants, examines for Negri bodies. I then lifted him into buggy and drove to the hospital of Drs. Dunn and Sullivan, two local veterinarians. I tied him in a stall, but he fought against confinement so hard, barking and choking in collar, that we put him in a box with wire door. Here he plunged his face against wire so hard and continuously that nose and mouth became covered with blood. Three or four hours later Dr. Dunn led dog out of box with slip-knot around his neck, the noose being at end of heavy stick. Dog objected to this quite strenuously and bit at stick. On this being removed he ran around hospital and ferreted out the doctors' Blue Belton bitch and tackled her quite fiercely, but when the bitch was removed he acted perfectly natural. Negri bodies were profuse. Brain examined at Brown University. History: Was bitten August 11, 1907. A little girl who witnessed the fight brought dog home. She has since identified the dog who bit this one, and he is now alive and well. This dog, without meaning to bite owner, scratched his hand with teeth, bringing blood. Post-mortem: Larynx, pharynx and every organ in body beautifully healthy.

Case 7.—Oct. 20, 1907, saw this dog in Drs. Dunn and Sullivan's hospital. Breed, bull terrier; dumb rabies; jaw dropped. Symptoms: Very marked case; head drawn slightly to one side, breathing hard and loud; very lame from bites (bites not

healed); was too sick to notice anyone, was in a sitting position. History: Strange dog attacked him and owner of Case 7 was bitten, separating them, by both dogs. No. 7 was of a very mild disposition, never starting a fight, but once started, had never been whipped. Post-mortem by Dr. Dunn: Larynx, pharynx and trachea very much inflamed. Brain examined at Brown University. Negri bodies *absent*.

Case 8.—Oct. 28, 1907: Saw this dog in box in Drs. Dunn and Sullivan's hospital. Breed, Boston bull; very valuable show bitch. Symptoms: Occasionally would raise her head, and pointing nose in air would bark; bark had a peculiar sound. Would bite her straw bedding; a stick put in box would be bitten. Was offered water, which she lapped, but could not swear she swallowed; evidently she was not very thirsty. Dr. Dunn offered her pieces of meat; she took them from his hand with *extra care and gentleness*, but would not eat. History: Owner says she was not bitten; sick but a few days. Brain examined at Brown University and Negri bodies were found.

Case 9.—Nov. 13, 1907: Breed, collie; age, four months. Symptoms: Was informed he had terrible spells of barking; then running and foaming at mouth. Found him at head of stairs. As I got near him he took a fit, barking in usual "fitty" manner and running downstairs by me. I would call it a light attack, for, as I tried to corner him, he tried, *intelligently*, to escape me, barking and yelping furiously. When I grabbed him he got worse and tried to bite me. He acted scared out of his wits. I etherized him and gave him a dose of cyanide of potash. History: Owned pup for two months; had never been well; had received worm medicine. No post-mortem. Examination of brain at Brown University. Negri bodies *not* found.

TREATMENT OF TRAUMATIC TETANUS.

By GUS. WHITE, G. M. V. C., Kyabraun, Vic., Australia.

The writer feels secure in saying that few veterinarians are fortunate enough to bring about a successful issue in a well-developed case of that most intractable affection, tetanus. Therefore the following detailed account of a case may prove of interest to some readers of the REVIEW. Being somewhat interested in the antitoxin treatment of tetanus the writer deter-

mined to give it a thorough and exhaustive trial on the first opportunity, and although one cannot judge as to the efficacy of any therapeutical measure on the facts of a single case, the writer is convinced that the antitoxin treatment of this disease is of inestimable value.

Subject: A valuable trotting mare, two years and six months of age, in good condition.

History: On March 11, 1906, the owner called at my office and requested me to visit his farm next day for the purpose of examining a mare which he described as having caught cold in the back, as she had become very stiff and was unable to turn around. He also said that she had a "red skin" protruding over the eyes. My suspicions were immediately aroused, and on inquiring if the mare had been injured in any way, I elicited the information that she had recently sustained a badly bruised heel, but which was now apparently well. I then informed him that he probably had a very bad case of tetanus to deal with, and after explaining the dangerous nature of the malady he became greatly alarmed and requested me to visit her immediately.

Symptoms: Tonic spasm of the muscular system most marked in the muscles of the head, cervical, gluteal and lumbar regions. On approaching or speaking to the animal she would start violently and almost fall to the ground. The tail was raised, forming almost a straight line with the back. Trismus well marked. Membrana nictitans covering anterior half of the eye. Temperature 102° F. Respiration about 60 per minute. Bowels somewhat constipated. Urine scanty and albuminous. The mare had great difficulty in eating and also in lowering the head to drink on account of the muscular rigidity, but on raising the drinking vessel she would drink with avidity. On making an examination of the injured foot a circumscribed yellowish red area was noticed on the outside heel of the near fore-foot, just at the union of the horny wall and bar, and resembling in every respect the so-called "corn."

Treatment: The patient was placed in a darkened, well ventilated loose box, but not free from noise, as the box was contiguous to other boxes and stalls, some of which were always occupied. The bruised area in the heel was pared out, which proved rather difficult on account of the difficulty experienced in flexing the limb, removing all traces of necrosis of tissue and causing the wound to bleed freely. It was then flushed out with

warm Hydrarg. Perchlor. solution, 1:500 for ten minutes, and the cavity dressed with glycerin, acid carbolic 1:4 and plugged with cotton wool, this treatment with the exception of the Hyd. Perchlor. being continued once daily for a week. A bucket containing 1½ per cent. solution of carbolic acid was kept constantly in front of the patient throughout the treatment, and also after active treatment had been discontinued for a period of nearly four weeks—that is, during the time tetanic symptoms were present. The animal partook freely of this solution from the first. At 9 P. M. on March 11 30 c.c. tetanus antitoxin (human) was injected hypodermically and an additional dose of 30 c.c. was administered at 1 A. M. on the 12th. On the occasion of my next visit, at 2 P. M. on March 12, the mare appeared much worse, being greatly excited and the tetanic symptoms more pronounced. Chloral hydras. 1½ ounces was administered per rectum and 20 c.c. tetanus antitoxin hypodermically. At 4 P. M. she was much improved and drank a quantity of gruel. During the next six days' treatment consisted of 20 c.c. tetanus antitoxin daily with occasional hypodermics of morphine et atropin, when the patient seemed more excited than usual. Improvement, however, was marked from day to day, when on the 18th of March it was decided to discontinue the antitoxin, the animal then only receiving the carbolic acid solution, with usual details of nursing, etc. At the end of this time the muscles were sufficiently released to allow fairly free movements of the body, and also enable the mare to partake of solid food, consisting of green cereals, bran mashes, etc. No further treatment was adopted, the patient steadily improving, until at the end of seven weeks all signs of illness had disappeared.

Undoubtedly there are cases of tetanus which would, and do, recover without very much medical treatment, but in this case, judging from the severity of the symptoms exhibited, there can be no doubt as to the beneficial influences of the treatment adopted, and in future my tetanus cases will be treated on similar line, or at any rate until I have sufficient proof that this is not the rational treatment of tetanus.

THE USE OF IRISOL AND DYMAL IN PRACTICE.

By WALTER LINCOLN BELL, D. V. S., Brooklyn, N. Y.

Case No. 1.—Gray mare, first stages of "poll evil"; poll swollen, tender and discharging pus. Treatment: Bathing with

cold water, cleansing abscess with peroxide, syringing freely with 5 per cent. watery solution irisol, about three times daily. Treatment commenced in July, covered a period of three weeks. No recurrence present time (December).

Case No. 2.—English bulldog; badly lacerated wound top of shoulder and neck from fighting. Patient was brought to my office nearly three weeks after injury, having had no treatment but household remedies. Clipped matter hair and removed old scabs, cleansed wounds thoroughly with 2 per cent. watery solution irisol, and after drying thoroughly dusted lacerated surfaces with dymal. Supplied owner with same strength solution irisol and small amount dymal with instructions to dress as above twice daily. Owner reported complete healing in one week.

Case No. 3.—Bay mare; abscess on hip from fall. Opened abscess, evacuated pus, flushed out cavity with 5 per cent. watery solution irisol through four-quart fountain syringe. Above treatment with hot bathing three times daily. Recovery rapid and much more satisfactory than formerly secured.

Case No. 4.—Black gelding; acute peditis, had picked up nail ten days before I was called, but had been kept at work after blacksmith had treated as they usually do. Found tract (where the nail had entered) discharging pus, and foot extremely painful. Syringed pus tract freely with 10 per cent. watery solution irisol, dusted some dymal powder over solar surface of foot, encased entire foot in large compress of absorbent cotton, saturated with hot 10 per cent. watery solution irisol. Changed each second day. Tenth day animal discharged for service.

Case No. 5.—Brown gelding; same as No. 4, only horse had been under treatment about three weeks when I was called. Wound discharging freely a very offensive pus and horse could not put foot to the ground. Cleansed wound freely with 5 per cent. solution irisol, injected about 10 minims pure irisol, inclosed entire foot in absorbent cotton compress, saturated with irisol solution, covered with burlap and bandaged tightly on. Dressed as above every second day for three dressings, then had shoe tacked loosely on. Instructed stableman to syringe the wound freely with 5 per cent. solution irisol, pack sole of foot with oakum saturated with the irisol solution, which was to be held in place with removable strips of hoop iron so the foot could be dressed three times daily. This horse was discharged for light service in sixteen days, which, considering the serious condition in which I found the foot, is to my mind very satisfactory.

Case No. 6.—Bay gelding; severe rope burns over the inner aspect of hock. During the night this horse got one hind leg over the rope running across the back of the stall and in the morning was found with two very severe burns. Bathed the leg thoroughly with hot water, cleansed the wounds with 5 per cent. solution irisol, dried and pressed dymal powder in over abraded surfaces. Ordered same treatment three times daily and in ten days had the animal ready for service.

I have used irisol and dymal on many other cases and have had very favorable results generally, and now use irisol in preference to the other antiseptics I formerly carried.

Its being non-toxic, of pleasant odor, as well as making a perfect solution instead of the opaque color of the coal tar carbolics, make it extremely satisfactory for surgical and canine practice, aside from its efficiency as an antiseptic.

A VETERINARY SURGEON one day prepared a powder for a sick horse and gave it to his young assistant to administer. The assistant asked how it was to be done, and the doctor gave him a large glass tube and told him to put the tube into the horse's mouth and blow the powder down his throat. A short time afterward there was a great commotion, and the doctor rushed out to find his assistant in trouble.

"Where is that medicine?" he shouted. "What's the matter?"

The assistant coughed several times severely and then spluttered:

"The horse blew first!"

A CERTAIN MAN, living in a New England village, lost a horse one day, and, failing to find him, went down to the public square and offered a reward of five dollars to whoever could bring him back.

A half-witted fellow who heard the offer volunteered to discover the whereabouts of the horse, and, sure enough, he returned in half an hour leading him by his bridle. The owner was surprised at the ease with which his half-witted friend had found the beast, and, on passing the five dollars to him, he asked:

"Tell me, how did you find the horse?"

To which the other made answer:

"Waal, I thought to myself, where would I go if I was a hoss; and I went there, and he had."

SURGICAL ITEMS.

By Drs. LOUIS A. and EDWARD MERILLAT, Chicago, Ill.

RECENT DATA IN VETERINARY SURGERY.

(Continued from December REVIEW).

Etiology of "Idiopathic" Tetanus.—There are many cases of tetanus whose etiology cannot be explained. There is no pre-existing traumatism to which the disease can be attributed, despite the most careful and persistent search over every spot of the patient's body. Previously these cases—in lieu of a more plausible explanation—have been attributed to wounds that escaped notice and have healed without leaving any trace of their previous existence. More recently it has been shown that tetanus may be of intestinal origin, that the intestines of nearly all mammals, but especially herbivora, are a favorite habitat of the bacillus of Nicolaier, which under certain debilitating influences are capable of suddenly becoming pathogenic and of injecting the economy with fatal doses of tetanic poison. Feeds contaminated with earth—the exogenous habitat of the tetanus bacillus—carry large numbers of this microbe into the digestive tract, when these are ingested raw, and thus keep the contents of the intestines of herbivora constantly infested with a dangerous creature. The intestinal contents of human beings is less constantly infested because little food is ingested without some form of preparation that would wash off or destroy the microbe. The intestinal contents of the horse, on the contrary, may be regarded as being constantly contaminated.

These simple revelations will explain many cases of equine tetanus whose etiology was previously very mysterious.

Antitetanic Serum.—Despite the fact that the widest possible publicity has been given to the uselessness of antitetanic serum in the treatment of tetanus, every meeting of veterinarians wherein the disease is discussed shows that some of us still remain unacquainted with the limitations of this "*contributor of passive immunity.*"

To set matters right, let it be remembered that although anti-

tetanic serum will perfectly neutralize the toxin *in vitro* it does not modify the symptoms, because they do not appear until the poison has been transformed into a new compound by combining with the protoplasm of the nervous cells. In short, the real tetanic poison is not the toxin elaborated by the bacillus of Nicolaier, but a new compound formed by the union of the toxin with nervous matter, upon which the antitoxin can have no neutralizing effect. "Antitoxic serum is preventive and not curative, because it can only neutralize the toxin itself. It is without effect on the new substance which in reality causes tetanus." (Principles of Vet. Surgery).

Before dismissing this subject it might be mentioned that the direct application of antitetanic serum to the tetanogenic trauma is a preventive measure *par excellence*. It brings the undiluted serum into direct contact with the poison, and besides contributing toward the immunization of the patient it promotes healing of the wound (Kinyoun, *Jour. A. Med. Assn.*, Aug., 1906).

Actinomycosis.—There is little new to mention in regard to this common affection. In man the disease is rather rare, although isolated cases are now reported with greater frequency than in former years, probably because it has not always been recognized as such. In veterinary surgery, its pathologic and clinical features are too well known to require any further discussion. Betagh (*Archives Internationales de Chirurgie*, 1906) in discussing several cases coming to his notice ends by commenting favorably upon the value of potassium iodide in the treatment. Without deprecating the value of operative treatment he concludes: "In actinomycosis of slow course and from organisms of attenuated virulence the best results will be from intensive medical treatment." In animals this medication is often too expensive and not infrequently impractical on account of the intractability of the patients, although the value is well known. Total ablation in all of the operable cases is undoubtedly the very best treatment in animals, and when this cannot be satisfactorily accomplished every part of the infected tissues that can possibly be reached, should be packed with copper sulphate, a remedy that is as specific locally as potassium iodide is internally. F. E. Jones (Illinois), after a number of years of experience, claims the failures will be few if the copper salt is diligently applied, even when the jaw is badly implicated and some of the molars have loosened in their

cavities. The cure depends upon destroying the fungus, and when this is accomplished cicatrization is rapid.

Burns.—In the treatment of burns of the first and second degrees carron oil still has many advocates, although the tendency to-day is to discard it for more modern methods. In burns, the surgeon now respects the dictates of modern wound treatment and deals with them much the same as any other wound. The burn must be disinfected and protected against subsequent infection, and although the surface is sometimes large, no part must be neglected. Saturated solutions of either sodium bicarbonate or picric acid with preference to the latter are recommended very highly for washing burned surfaces.

In animals diffused burns of the first and second degrees are usually fatal; the injured subjects do not long survive them. The magnitude of the treatment necessary to obtain results and the pulmonary complications which arise from the inhalation of smoke and hot air at the time the burn was sustained cause a high rate of mortality. In uncomplicated circumscribed burns a thorough cleansing with mercuric chloride solution and hydrogen peroxide, followed by packs of picric acid solution, is most prone to encourage a rapid cicatrization. Another method first recommended by Porteus and used to good advantage by the writer on several occasions consists of washing the parts well with a potent antiseptic, painting it thoroughly with tincture of iodine and then dusting it well with starch. In fine, it is seen at a glance that thorough antisepsis, however accomplished, is the indispensable feature of the treatment. The greatest objection to carron oil is that it is usually applied without having first disinfected the burned area.

Carcinoma.—Senn, in "A Plea for the International Study of Carcinoma," at Lisbon, last year, said: "The prevalence of this disease, its relentless course and obstinacy to all known methods of treatment, surround it with the gloom of fear and hopelessness to the public. By hearsay and observation the masses are firmly impressed with the idea that carcinoma is a fatal disease, and such a diagnosis is regarded as a death sentence." In spite of many years of constant, diligent and even frantic efforts on the part of the medical profession, urged often by pathetic appeals from very high sources, nothing definite has been disclosed as to its etiology and no treatment has been fruitful. Beyond the established fact that it is at first a local affection that may be successfully dispatched by prompt ablation, there is nothing encouraging

to say about cancer. Left alone, no matter where located, it runs its slow but certain course toward a fatal ending in from three to five years. To be frustrated at every turn that might end in solving the mysterious problem in itself is discouraging enough, but to be confronted in addition with vital statistics that show a marked increase in the disease adds materially to the importance of the problem to all mankind.

In animals, carcinoma is relatively less important than in the human being, largely on account of the short lives of most of the domestic species. In the horse, the cow and the dog, whose lives are preserved during their usefulness, malignant tumors are common enough to have excited more attention from the veterinarian. Frohner's statistics show that 47 per cent. of true tumors in dogs, 34 per cent. in horses and 29 per cent. in bovines, are malignant growths. As to the frequency of tumors in domestic animals statistics gathered at the veterinary schools of Berlin, Munich and Dresden show that about $1\frac{1}{2}$ per cent. of all horses, $4\frac{1}{2}$ per cent. of all dogs, and almost 20 per cent. of all bovines presented for treatment were suffering from tumors. By comparing these figures with Frohner's ratio of malignancy, a mere mathematical calculation at once shows that the subject of cancer is not as nugatory as is generally supposed.

The duty of the modern veterinarian in dealing with all growths is to recommend their prompt ablation, before they have encroached into forbidden grounds and before they are given the opportunity to generalize. In all non-operable cases an early histological diagnosis is always desirable in order that they may be intelligently prognosticated.

Arterial Anastomosis.—Surgery of arteries while not entirely new has never been practiced to any appreciable extent until the last few years. Previously, it has always been the custom to ligate severed or wounded arteries and veins and then trust the establishment collateral circulation to nourish the part deprived of blood by the obliteration of the vessel. Recently, it has become customary to restore the continuity of cut vessels by approximating the cut ends with sutures, as often as such a procedure is possible. The anastomosis is effected by invaginating the proximal into the distal end by a special method of suturing, whose description would require too much space to describe here (see works on General Surgery). The necessity for the operation is that of restoring circulation to a part that might become gangrenous pending the slow development of collateral circulation. The

procedure is generally successful. Secondary hæmorrhage is not as common a sequel as might be supposed. The subclavian and the common femoral (Murphy, 1900) have been successfully (Brougham, Surgery, Gynecology and Obstetrics, April, 1906) anastomosed. Experimental operations have shown that vessels anastomosed artificially sooner or later obliterate. The presence of the suture in the lumen of the vessel and the fringes of the intima gather a coagulum whose ultimate destination is that of occluding the lumen entirely, but as this process (endarteritis obliterans) is slow, the collateral circulation gradually undergoes a compensatory increase in capacity, and thus maintains a *status quo* during the obliterating process.

While there may be a few contingencies in veterinary surgery where this procedure is indispensable, as a principle of surgery it is worth knowing. It is worth knowing that cut arteries may be thus utilized to forestall an impending ischemic gangrene, although in domestic animals collateral circulation is entirely depended upon to supply the necessary nutrition when arteries are accidentally divided or intentionally sacrificed, the perfected surgical technique of the future may include arterial anastomosis and probably to very good advantage under many circumstances.

Regeneration of Divided Nerve Trunks.—There is still some controversy as to the mode by which severed nerves are restored to usefulness. On the one hand are the adherents to the *direct union theory*, while on the other are those of the *outgrowth theory*. That is to say, some still claim that reunited nerves are capable of conducting impulses almost as soon as the union is effected, whilst others deny that function is restored until the axons have grown from the proximal segment to the end-organs. Harrison (Liverpool *Medico-Chirurgical Journal*, Jan, 1906) shows pretty clearly that the weight of evidence is in favor of the outgrowth theory.

To summarize in a few words the accepted theory of nerve regeneration and without repeating the details of many experiments, one might hasten to say (1) that the experiments of those who adhere to the direct-union theory have been faulty; (2) that there is a certain amount of regenerative activity in the distal segment that materially helps the axons to reach the periphery; (3) that the neurolemmal cells of the distal segment for a time multiply and form into chains, but they are incapable of performing the function of impulse carriers until the axons from the proximal segment grow forward to perfect the mechanism, and

the restoration is not complete until the growth has extended to the very periphery; (4) that motion is restored more tardily than sensation because the muscle tissue which has atrophied during the suspended innervation must, in addition to the nerve, also be regenerated; (5) that when the cut ends are not approximated (e. g., veterinary neurotomies) the restoration is either nil or imperfect; (6) that scar tissue, even when the cut ends are approximated, blocks the nervous regeneration.

In veterinary practice neurologic surgery is practiced for the purpose of destroying sensory nerves, whilst in human practice its chief mission largely is that of restoring the function of motor nerves, hence the regeneration of nerves is studied with much greater interest by the human surgeon. Despite this difference the veterinarian transgresses so often upon the nervous system in the practice of surgery that not a single forward step in the science of neurology should be overlooked, and, furthermore, the intelligent prognosis of such diseases as shoulder "sweeny," brachial paralysis, facial paralysis, crural paralysis, *et al.*, depends entirely upon our knowledge of nervous regeneration. Its philosophy explains the processes by which atrophied regions are ultimately restored to their normal volumes; to remain ignorant of this philosophy is to continue to treat such conditions empirically. In a word, the veterinarian should not lack a good working knowledge of the anatomy, physiology and pathology of the nervous system.

Neuromy of a Large Motor Nerve with Immediate Approximation—An Experimental Operation.—As a contribution to the study of nerve regeneration, the following described operation was performed in the surgical department of the Chicago Veterinary College, Feb. 11, 1905. The subject selected is a middle-aged bay horse in good general health, weighing 1,000 pounds, with no other blemishes than windgalls and a slight tumefaction of the right stifle that caused no lameness. The nerve selected for the operation was a small femero-popliteal, which traverses superficially over the superior third of the tibia from above downward and forward and then branches into four divisions, one of which is the motor nerve of the extensor pedis. While this large nerve is largely sensory, the fact that it contains within its sheath the sole motor nerve of the extensor pedis renders it particularly suitable for the experiment we are about to describe. It is in addition very superficial and therefore accessible for an experimental operation.

Details of the Operation.—In order to assure a clean field the region was shaved and disinfected several times during the twenty-four hours preceding the operation. Mercuric chloride and alcohol were the disinfestants used. On Feb. 11, 1905, the subject was secured on the operating table, and after another washing of the field an incision $1\frac{1}{2}$ inches long was made directly over the course of the nerve, through the skin and then through the thick tibia fascia, beneath which it is imbedded in a loose areolar tissue. The nerve was dissected from its areolar attachments, divided in the center of the incision and then immediately approximated by Murphy's method with fine twisted silk. The fascia was closed with buried sutures of catgut and the skin with interrupted sutures of braided silk. The closed wound was then covered with a thin layer of clay-glycerine dressing, upon which was matted a little cotton. No anæsthetic was used.

Upon leaving the table the horse was unable to extend the phalangeal articulations, but stumbled awkwardly on the front of the fetlock at every step. Tarsal flexion was normal, but digital extension impossible. In order to encourage prompt healing of the wound the patient was not disturbed further for eight days, during which time he was kept in the standing position. On the eighth day the dressing was removed and the stitches removed. There was a slight stitch suppuration, but union had taken place by first intention. There was some reaction beneath, as indicated by a rounded but strictly local swelling, but no suppuration other than that occurring from the sutures was ever noticed. In due time the region became normal, with the exception of a slight nodule at the seat of approximation, and this, too, disappeared after one month.

The paralysis was followed, beginning on the second week, by a pronounced atrophy of the belly of the extensor pedis, which reduced the volume of the tibial region to a mere skeleton. The tibia viewed anteriorly stood out in bold relief.

During the succeeding nine months there was no change, except that the horse learned to walk by swinging the phalanges into position automatically. It was only when surprised by sudden fright that the foot slipped backward and the weight fell on the front of the fetlock, showing that the paralysis was still complete. At the end of eleven months the atrophied muscle began to increase in volume, and with this change the extension of the digits was gradually restored. In fifteen months every-

thing was normal. To-day the horse is working, none the worse from the ordeal.

The experiment summarized shows (1) that the continuity of the nerve was restored in at least twelve days after its division; (2) that it required at least nine to ten months from its axons to grow to the end-organs; (3) that it required eleven months for the atrophy to improve; and lastly, that fifteen months were required to complete the regeneration.

(To be continued.)

RESULTS OF THE EXPERIMENTAL METHOD OF INVESTIGATION.—There can be no doubt that the main cause of the remarkable development of science in modern times has been the adoption of the experimental method of investigating nature. In every department of research this method has led to the most important advances, both in questions of theory and in practical applications to the useful purposes of life. From the beginning of its history the Royal Society has fostered the prosecution of experiment, not only in physical and chemical, but in biological inquiry, and its publications are full of records of the discoveries which have consequently been made. In no branches of investigation have the theoretical and practical successes of experimental work been more conspicuous in recent years than in physiology and its practical applications in medicine and surgery. In medicine, the careful and patient testing of the effects of drugs on the lower animals has not only led to an accurate knowledge, not otherwise attainable, of these effects as produced on the human body, but has greatly increased the number of substances now available to the physician in the treatment of disease. Without this method of investigation the progress of pharmacology, in recent years so astonishing and beneficent, would be arrested, and diseases, which may in time be successfully combated, would continue their ravages unchecked. In modern surgery the application of similar experimental work has been attended with brilliant success. Most delicate and fundamental operations on the human body have been made possible by the knowledge obtained from the treatment of animals.—[*Extract from a recent statement of the Royal Society of England.*]

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

BY PROF. A. LIAUTARD, M. D., V. M.

AN INTERESTING SURGICAL CASE [*J. L. Marshall, Assistant to G. Harris, M. R. C. V. S.*].—The record of a case of laparotomy performed on a 12-year dog, which suffered much with constipation, and in which, when examined, a foreign body had been diagnosed as the cause of the trouble. The animal was operated on and a flint stone with conglomeration of hair and gravel was removed. The author remarks that the points of interest were that only boiled water had been used to prepare the field of operation and that the temperature of the dog became and remained normal after the operation, while it had been as high as 102° F. before. Complete recovery in twelve days.—(*Veterinary Record.*)

DIAPHRAGMATIC HERNIA [*Robert Bryden, M. R. C. V. S.*].—This mare after a fall, while at work, was taken with colics and abdominal pains which never left her entirely during the 30 hours that her illness lasted. The post-mortem is very interesting: "There was a rupture about 8 inches long in the muscular portion of the diaphragm about its middle on the left side. The edges were ragged and stained with blood. Through this opening the stomach and the greater part of the small intestine had entered the thoracic cavity. After carefully dissecting the diaphragm from its attachments, the foreign organs were taken off for examination. The omentum contained nearly all the ingesta, the stomach was empty. There was a rupture 6 inches long on its lower border, and at right angles to this was a smaller tear in the peritoneal covering only, measuring about 3 inches long. The spleen was slightly enlarged, of salmon pink color, and contained a cyst about the size of a hen's egg.—(*Veterinary Record.*)

STIFFLE JOINT LAMENESS [*R. Porch, F. R. C. V. S., and William Hunting, F. R. C. V. S.*].—Record of two cases presenting similar symptoms during life and almost identical lesions

after death, as shown by very good illustrations of both. These two patients were omnibus horses and had been disabled for a long time before being destroyed. One was a seven-year-old mare and the other a black eight year old. The symptoms were as follows: At the commencement of the lameness, they were not well marked; little more than stiffness of the hind legs. Later the extensor muscles of the thigh showed excessive rigidity when the animal was moved. When made to walk the hind legs were carried forward stiff and straight, as though jointless, and the muscles in front of the femur were spasmodically contracted. Both hind legs were affected, but the near one the most. At post-mortem no lesion was found except in the stifle joint. On the trochlea of the femur the cartilage was on the inner lip, thin and roughened. It was not ulcerated and it retained its translucent quality, so that through it, could be seen, a reddened and roughened surface of bone for nearly the whole length of the inner lip of the trochea. The patella was unaltered except that the articular cartilage corresponding to the diseased part of the femur was thin.—(*Veterinary Record*.)

LUXATION OF THE ASTRAGALO-TIBIAL JOINT [*Walter Jowett, F. R. C. V. S.*].—While being exercised a mare slipped and fell, the left hind foot caught, while the off leg slipped outwards. The animal got up without assistance, very lame, hobbling on three legs. On examination it was found that the portion of the leg from the astragalus down could be moved to a considerable extent outwards; in fact until it formed an angle of about 110° , with the upper part of the leg. There was no crepitation nor any manifestations of pains when the leg was handled. The mare was killed. On dissecting the joint there was found a rupture of the entire internal lateral ligament and of a portion of the synovial membrane. The distal end of the tibia was displaced inwards, but no bones were fractured.—(*Veterinary Record*.)

PARAPHYMOSIS IN A CRYPTOID TERRIER—OPERATION [*W. H. Flook, F. R. C. V. S.*].—A fox terrier suffers with recurring paraphymosis. At the last attack an incision has to be made under the prepuce so as to reduce it. Things went on well for a while and then returned. Castration was recommended and the removal of the present testicle carried out. This did not cure the dog until finally laparotomy had to be performed and the

testicle that was in the abdomen removed. This last operation proved successful and the dog was relieved forever of his paraphymosis.—(*Veterinary Record*.)

BLOOD POISONING IN A SHEEP DOG [*T. Hodgins, M. R. C. V. S., and A. Heinemann*].—Aged six years, this dog was very lame and reported suffering with eczema between the toes. The aspect of the leg pointed to blood poisoning. Careful examination failed to detect any wound or injury. Free incision and cleansing with chinosol solutions were resorted to. Morphia was given hypodermically. The knee was considerably swollen. Tendons above the knee commenced to necrose. Finally, after the third day, while making another examination, a wild oat with bearded husk was discovered, 2 inches above the knee. It had entered between the toes and worked its way up through the connective tissue. The treatment and the indications that followed were simple and recovery the result, after three weeks in treatment.—(*Veterinary Journal*.)

FRENCH REVIEW.

BY PROF. A. LIAUTARD, M. D., V. M.

ORCHI-VAGINALITIS IN A HORSE [*Mr. Leblanc*].—Orchitis of no specific nature, is not infrequent in horses yet is observed and in a majority of cases it is accompanied with vaginitis and the result of traumatism of some kind. Such is the following case. A stallion has probably received a blow in the scrotal region, as this is swollen, principally that on the right side. Scrotum stretched, smooth and painful on pressure. It feels like a tumor full and containing liquid. The testicle cannot be detected. The animal moves with difficulty with his leg on abduction. As his temperature is above 40° it is not advantageous to malleine him. Operation is decided. The condition of the parts do not allow castration by covered testicles, which is the classical method. As the envelopes are gorged with infiltration and form a thick covering 2 centimeters thick, an incision is made through them and the vaginal sac opened posteriorly. At that time a small quantity of grayish fluid escapes. The vaginal sheath is then opened from backwards forwards. It is found filled with gelatinous mass surrounding the testicle. The mass is removed, the testicle isolated and removed with the ecraseur. The wound is

carefully disinfected, a plug of gauze is placed in it and the edges closed together with two stitches. After removal of the other testicle, the horse is allowed to get up. The next day the temperature is down to 38° —6. Recovery went on without accident.—(*Journal de Zootechnie.*)

BIER'S METHOD IN VETERINARY MEDICINE [*Mr. Parent*].—This method is much used in human surgery in the treatment of dry, suppurative and rheumatic arthritis. It consists in the application of a bandage similar to a band of Esmarch, which is rolled, moderately, round at 10 centimeters above the diseased joint. It is left in place for 18 hours and then taken off to be put in place again, if the pain remains after 12 hours. The author has resorted to its application in two cases of injuries. In the first case a horse had a wound of the right knee, from which escapes a large quantity of pus but no synovia. The animal is on three legs, the leg is swollen and any flexion is very painful. Appetite is gone since two days. The method of Bier is applied. The next day there is marked improvement. The band is taken off. The animal is better, nevertheless the band is put on again the day after. The following day all pain is gone and cicatrization goes on rapidly without any danger of complication. In the second case the injury was on the left hind leg, a suppurating wound on the external face of the upper third of the leg, result of a kick. The hock is warm and painful, appetite gone and temperature up to 39° —3. Application of the band of Bier, and after eight days all morbid phenomena have subsided.—(*Revue Veterin.*)

CONGENITAL LUXATION OF BOTH ELBOW JOINTS IN A DOG [*Mr. Edmond*].—Bob is a two months' pup, of common breed. Since his birth he shows marked weakness of both forelegs, which has always been the same, and notwithstanding a very substantial *regime* to which he has been submitted. When the animal takes the standing position, its attitude is peculiar. On account of the deviation of the bony structure, that is of the radius and cubitus, the forelegs, in the carpal and metacarpal regions, are in contact by their internal faces. The forearms and the elbow joints rest constantly on the ground by their posterior faces. The hind legs have a direction nearly normal. Progression of the animal is very peculiar. The movements are very limited at the two elbows and the angles, formed by the bones that compose those joints, can only be open but very little

and never enough to allow the radius to assume a perpendicular direction. The joints are very much enlarged in width. By manipulation, it is easy to detect that the sigmoid cavities of the radius do not correspond to the articular surfaces of the humerus. It was a well marked case of congenital dislocation, which was accompanied with atrophy of the different muscles of the arm and forearm.—(*Revue Generale de Medec. Veter.*)

RUPTURE OF THE THORACIC AORTA IN A DOG—PRESENCE OF SPIROPTERS [*Mr. Bel*].—Having died suddenly and being suspected of having been poisoned, the autopsy of a young Danish dog was made by the author, who found a rupture of the aorta with a large amount of blood in the thorax. On examination of the artery from the cross to its passage, through the diaphragm, there was found on the right side of the vessel two small openings, through which blood was oozing. At a small distance from these, there was a small tumor, as big as a bean and further on two others, one of which was as big as an egg. These three tumors were adherent quite intimately to the aorta, whose walls had undergone a certain amount of degeneration. The tissues of these growths was hard to cut, they contained a reddish and purulent mass, in which five or six Spiroptera Sanguinolenta were found. In the other part of the blood-vessel, there were found two other growths as big as hazel nuts. This dog had been imported from Tunisia, since a few years. He had lost flesh somewhat, was in its habitual condition, eat well and was not suspected of being sick.—(*Journal de Zootechnic.*)

ABSCCESS OF THE ABDOMINAL WALL IN A STEER AND HERNIA FOLLOWING [*Mr. Durand*].—The author was called to attend to this animal for a tumor that he has on the right flank. He diagnosed an abscess in the way of formation, prescribed a local treatment and after a few days opened the tumor, from which escaped grumulous pus mixed with yellowish serosity. To prevent too rapid closing of the wound and allow the cleansing of the cavity, the edges of the incision are cauterized. After a month, it seems as if the growth was reduced but little. Another similar growth is then observed on the other side of the abdomen. But this time the tumor is bigger. This abscess receives the same treatment as the first, with the same result. Opening of the second abscess, same cauterization of the edges. It is then that an examination of the condition of the first abscess is made and a hernia is found in its place. One month later a third abscess

forms. It extends to the scrotum and has the same character as the other two. Same treatment. At that time the second abscess is closed and in its place again another hernia is found. These hernias remain with the same dimensions. The author says that he expects to have another third abscess as he has had with the two first.—(*Revue Veterin.*)

LACERATION OF THE ŒSOPHAGUS IN A MARE—RECOVERY [*Mr. Larrieu*].—A mare had strangles. She presented a large swelling on the left side of the neck. "An abscess only," says the owner. But when it bursts, contents of the œsophagus are noticed. At the junction of the middle and upper third, there is a wound from which escapes food mixed with thick yellow fluid. The animal is offered water from a pail; she swallows and a large flow of water comes out by the wound of the œsophagus. The diagnosis is certain. The mare was kept in a field with other horses and she most likely received a kick on the side of the neck, just over the place where the swelling existed, and a traumatism was the result, in which the œsophagus had been involved. No special treatment was prescribed, only local cleaning, attention to the external wound with repeated drinking, so as to have a kind of automatic cleaning of the œsophageal wound. Feeding with dry fibrous food, lucerne, hay, etc. Complete recovery in thirty days.—(*Revue Veterin.*)

GERMAN REVIEW.

By J. P. O'LEARY, V. M. D., Bureau of Animal Industry, Buffalo, N. Y.

THE NEW TUBERCULIN REACTION [*Prof. Rubayin. Brussels*].—Inasmuch as tuberculin, which has been in general use for the last fifteen years as a thermic reaction agent for the detection of tuberculosis in man and animals, is far from being infallible, we can readily understand the deep interest the entire medical world has displayed in the newly discovered reaction agent. On the 8th of May, this year, Dr. Von Pirket, of Vienna, Director of the Children's Clinic, found that a drop of tuberculin on the scarified skin of a tuberculous child produced a specific

cutaneous reaction in the form of erythematous papules, similar to vaccinia, which does not appear on healthy subjects, with the exception of a slight transitory hyperæmia. In children under two years this local action is typical and particularly characteristic when surgical or meningeal tuberculosis is present. In children over two years of age it appears less specific, and in the case of adults it seems to be almost always present. Von Pirquet concludes from these astounding symptoms that all men at a certain age are or have been tuberculous. After this discovery, numerous control experiments were undertaken and Dr. Burnet, of the Pasteur Institute was one of the first who experimented upon himself, and although he had never presented the slightest symptoms of tuberculosis, the reaction was rapid and very pronounced after the lapse of five hours. On the edges of the fine cutaneous incisions the erythema first appeared, and at the expiration of thirty-four hours these parts were covered by a red oedematous zone. The reaction had reached its maximum after forty hours. On the inoculated surface there appeared narrow streaks of necrotic tissue, on which dry crusts formed and gradually became loosened and fell off after eight days. This whole process was accomplished without hyperthemia and completely painless, nor was there an accompanying enlargement of the lymph glands. The reaction in adults is, however, not uniform and frequently it appears in a slight degree, and again it is entirely absent; as a consequence all subjects do not react. It was interesting in the case of Burnet that a scarification repeated at the expiration of a week, likewise produced a positive reaction, only it appeared less marked.

Prof. Vallée, in Alfort, experimented with domesticated animals, selecting those parts of the body which could not be injured by the animal itself; in this case the top of the neck, or the side of the withers. Upon shaving the skin and washing it with freshly boiled water and cooled (without the addition of antiseptics), then scarifying the part selected, diluted tuberculin was applied on the scarifications with a soft brush. In healthy animals (horses, cattle, guinea pigs) no reaction took place, but in 25 animals, the majority of which were previously infected in a natural manner, a reaction took place. After 24 hours there appeared along the edges of the incisions a painful oedematous swelling, which gradually increased in size until it reached its maximum after 48 hours. It persisted for four or five days, then assumed a papulous appearance, which soon desquamated.

leaving behind a surface which healed in 10 to 15 days. This condition was not accompanied by an elevation of the body temperature, nor by any constitutional disturbance. In view of these results, further experiments were made and the question investigated whether or not a specific reaction could be produced by a hypodermic injection. For this purpose five cattle, which had reacted for five days as a result of scarifications, were injected subcutaneously with diluted tuberculin. The animals reacted very intensely after 2 or 3 days. The same occurred upon the skin when it was scarified simultaneously with the injection. This seems to be independent of the severity or the extension of the existing tuberculous affection. In contradistinction to the observations of Burnet, Prof. Vallée had found that tuberculous cattle became accustomed to the cuti reaction, an interval of several weeks must elapse before a further reaction can be obtained. Failures arise only when technical errors are made or the quality of the tuberculin is impaired. The question whether or not the conjunctiva of the eye, which easily absorbs microbic toxines, is applicable for reaction purposes, was taken up by Wolff-Eisner. He instilled diluted tuberculin into the conjunctival sac. The result was that after 12-24 hours a reaction set in in the case of tuberculous animals, and Vallée obtained the same results. At first the eye watered, followed by an inflammatory irritation of the conjunctiva with slight ptosis and finally œdema of the inferior eyelid and membrana nictitans, also the deposition of fibrin and purulent mucus. This ocular reaction lasted only a few days and was unaccompanied by a rise of temperature. A local reaction in healthy animals did not take place, the result was only lacrymation.

From this series of experiments it follows that particularly in the cuti reaction we possess a valuable control agent for the thermic reaction in the domesticated animals.—(*Deutsche Tier. Wochenschrift*, No. 41, 1907).

THE SYSTEMATIC TREATMENT OF SARCOPTIC SCABIES AND ECZEMA IN THE DOG [*Von Cunys*].—There are two diseases affecting dogs, which are very similar when generalized. One is eczema, the other sarcoptic mange. Eczema appears as a diffuse erythema which is quite remarkable on the fine parts of the skin and is accompanied by an intense pruritis. As a result of scratching with the claws, vesicles and pustules form, which soon burst open and discharge a serous fluid, finally forming into a scab. In sarcoptic mange, the parasite at first produces red

points on the skin similar to flea bites, which extend over the whole body as a result of scratching. As in the disease previously mentioned, vesicles, pustules and scabs form. In both diseases there is loss of hair, the skin becomes thickened, fissured and puckered, and emits a disagreeable odor. A differential diagnosis is difficult to establish, and in the case of scabies is founded solely on the presence of the sarcoptic mite. Therefore a systematic form of treatment is always in place. In order to destroy the mite successfully we must clip the affected dog all over, then wash the body with warm water and castile soap, in order to soften and remove the scabs, so that the parasite may be exposed, and finally dried. The animal is next dipped in a 1 per cent. arsenical bath at body temperature for a few minutes, in the meantime the skin being rubbed briskly with a hard brush and subsequently dried. We can add more astringent remedies to the bath, such as sulphate of iron 5 per cent. or alum 10 per cent. Previous to bathing, it is advisable to smear some fatty substance over the scrotum, and whilst in the bath care should be exercised that none of the fluid finds its way into the eyes or mouth. The baths are repeated three or four times, and finally Helmerick's salve is to be rubbed over one-half or two-thirds of the animal's body and washed off after two days; then the remainder of the body is to be treated similarly. In treating moist eczema we must bathe the affected parts with an astringent solution, such as lead water or a decoction of oak bark 25-50 grams to the liter, and absorb the exudate with powdered starch or subnitrate of bismuth. Eczema crustosum is treated with oil of cade or some other tar ointment; this is allowed to remain on for a few days and then followed by an astringent salve, such as zinc ointment, or the following may be applied: \mathcal{R} Tannoform, 10 grains; acid salicylic, 5 grains; vaseline, 100 grains. Mix. Or, if the case of a pet dog, the following is recommended: \mathcal{R} Resorcin, 1 part; vaseline, 6 parts. Mix.—(*Journal de Lyon.*)

CONCERNING A CASE OF SO-CALLED JECORIN (LECITHIN) SPLEEN [*Dr. Dobers, Weissensee*].—In a 1½-year-old Holland bull the entire spleen presented a clayey yellow color and an abnormal soft condition of the tissues. The yellow surface was interspersed with a large number of bright red points. The interior of the parenchyma showed the same clayey color, and the follicles intensely reddened. When this softened parenchyma was cut through, a mushy substance smeared the knife. At the Berlin

Hygienic Institute the histological examination revealed that the splenic tissue was not abnormally altered, but contained considerable small rectangular and polymorphous laminæ. These were found also in the pulp, connective tissue, in the lumen of the blood vessels, in the ampullæ, and in the Malpighian corpuscles. The aggregation of the lamellæ must have caused the abnormal coloring of the spleen. The chemical examination proved the presence of large quantities of lecithin, therefore the designation "Lecithin Spleen." The accumulation of a substance at least similar to jecorin also occurs in the spleen. Here we have to deal with highly phosphorated bodies, whose classification is still a matter of doubt. This condition is very rare, only one case being recorded in veterinary literature from the Berlin abattoir. —(*Zeitschrift für Fleisch und Milch Hygiene*, 1907.)

THE "King of Steers" has been slaughtered and his flesh used for human food. This animal is said to have been the biggest steer in the world. According to the *Cincinnati Post*, he was nearly 7 feet high, 17 feet from tip of nose to tip of tail, weighed 3,400 pounds, and was 7 years old. He had been admired by millions of circusgoers of two continents.

RUFUS RAND, 76 years old, purchasing agent for the Canadian Government in securing horses, dropped dead in a cafe in New York, December 18, 1907, from heart trouble. Mr. Rand was known throughout the United States by horsemen, through his purchases for the Canadian Government and was rated as one of the best judges of horseflesh in the land.

ALFALFA BREAD.—State Veterinarian Luckey of Missouri is of opinion that before long the leaves and stems of alfalfa will be ground into meal and bread made from it, which will in a large measure take the place of milk and of corn bread. "If for any reason a scarcity of bread stuffs should occur in the United States and the price of flour and meal should go up extremely high, I believe that alfalfa bread would be used extensively, provided, of course, that the alfalfa crop were not a failure at the same time. The seeds could not be used, as they would be too rich for a person's stomach. He would soon die upon the meal made from the seeds. It is the stems and the leaves that will be used."

ARMY VETERINARY DEPARTMENT.

AN ARMY VETERINARY SCHOOL.

LET US HAVE ONE AT FORT RILEY.

Those conversant with the life of the veterinarians of the line in the United States Army know that two striking faults, to be found among them, are: First, the absence of corporate feeling, the lack of solidarity whereby the imputation can be cast against them that there is a vexatious difficulty in getting them to act together as one man; second, the indifference to the call for earnest study of professional problems in military veterinary medicine, which, being heeded, has made men famous, like George Fleming, the translator and writer, late Principal Veterinary Surgeon of the British Army, like the present Veterinary Colonel J. A. Nunn, Principal Army Veterinary Officer of India—the listlessness which finds contentment in daily routine, especially when no sick cases are listed, the apathy to laborious effort which will add the results of investigation, or the results of military veterinary experience to the common store.

The first of these faults is illustrated when a movement is afoot for the improvement of the veterinary service of the army by Congressional enactment; for, is it not true that, when the good seed has been sown by veterinarians at large the country over and by the majority of army veterinarians, amongst the national representatives in Congress, some way or other some army veterinarians, maybe, sow tares—they send letters, perhaps, stating that they are not in sympathy with the movement. The second of these faults is illustrated in the mental inertia of some of the army veterinarians on all occasions, in the lack of enthusiasm for the study and record of new facts to be gleaned in the application of veterinary principles in the United States Army veterinary service, in the multitudinous questions, which, from year to year, on the part of the British Army veterinarians, for example, find point or answer in the London *Veterinary Journal*, or, on the part of the French Army veterinarians, in the *Revue gén. de méd. vétérinaire*.

The reasons for these conditions are not far to see.

The lack of corporate feeling is due to the variety of civilian veterinary colleges from which the men come, and the petty animosities with which the men seem to be engendered by them. How plastic the minds of young men in these veterinary colleges, up and down this fair land, are to the formative influences of educators, good and bad, is seen when their graduates enter the military service—in their notions, in the way they look at things and take hold of things, in their strange differences of opinion which nothing can heal. Just as in the building of the tower of Babel, according to the ancient story, there was a babel of tongues, so also among army veterinarians, there is apt to be a babel of mere opinions. True, we are proud of the fact, recorded in the Report of the Committee on Army Legislation of the American Veterinary Medical Association for 1905, that, amongst our army veterinarians, we have graduates of the Royal Veterinary Colleges of Berlin and London, of McGill, Harvard, Cornell and Pennsylvania Universities and the like. Yet this very blessing is in one way a curse, in that the veterinarian brings with him to the army post the strong bias for his own college; its views; its singularities; its ways. Man is not made by institutions. The potency of individuality is what counts in veterinary affairs, as in all other affairs. In the court of last resort, when we judge men, it is this individuality which turns the scales.

The reason for the second of these conditions, the listlessness of many army veterinarians, is the lack of necessity for study after the examinations, stiff as they are, for entrance to the army, are passed. There is no incentive for the army veterinarian to study after a man has once been ordered to his post. Raise of pay comes along in the regular course of things, without the necessity of passing further professional examinations for promotion—if that can be called promotion which brings neither change of grade nor status.

Under these circumstances there is an urgent need for the adoption of some scheme whereby the veterinarians of the line can be given: First, *esprit de corps*—the corporate feeling, whereby the spirit of the men will be tempered by the very same ideals; these ideals of professional men in military life, will be formed in the self-same mold; and, from those ideals, there will be no deviation nor shadow that is cast by turning. Second, the scheme adopted should tend to lift the men out of apathy,

and to make them, by intellectual industry, along professional lines, *sans reproche* in the army.

European governments, more particularly those of France, Germany and Great Britain, have been keen enough and wise enough to see the necessity of making their army veterinarians of the same pattern. In the case of France the aim has been, first of all, to require a candidate to be a graduate of a national veterinary school; secondly, to give him a special training in an army veterinary school before admitting him to a regiment; and, third, to keep him studying professional subjects by requiring him to pass professional examinations for promotion. Each French Army veterinarian, therefore, like those of Germany and Great Britain, has much the same cut, the same aspirations, the same ideals imbibed from his professional confrères in the military organization. If the experiences of Europeans cannot help us, what can? We cannot eschew their experiences. Temporarily we may; but, as time goes on, we will find that we will have to fall back on their riper judgment in the conduct of the United States Army veterinary affairs.

Like a short chapter from some Utopian romance reads, at present, to us on this side of the Atlantic, a description of the French Army veterinary school at Saumur.

The Army Veterinary School at Saumur (France).

By P. Laporte.

(Translated from *Revue gén. de méd. vétérinaire* I, 12, 1903).

The great cavalry school at Saumur is a military institution for the higher training of mounted officers of the French Army. It was founded in 1771. Around the original nucleus have gradually been built up several other technical schools connected with the cavalry, each needed in its way. They are:

1. The army veterinary school (*école d'application du service vétérinaire*).
2. The farriers' school (*école de maréchalerie*).
3. The signal service school (*école de télégraphie*).
4. The school for saddlers (*atelier d'arçarmerie*).

The army veterinary school was established in 1854, and attached to the great cavalry school. On the extensive grounds are on hand 1,400 horses of all breeds, giving the cadets a rich and valuable material for the study of conformation. The cadets must be graduates of one of the national government

veterinary colleges (those of Alfort, Lyons or Toulouse), and before acceptance must submit to a physical and moral examination. The number in attendance varies between 10 and 40 yearly; at present there are 23 young veterinarians in attendance. They have the title of "aide vétérinaire stagiaire" and wear the uniform of the assistant-veterinarians without insignia of rank. The final acceptance in the military service is dependent upon an examination covering the subjects taught at the school.

The lectures, demonstrations and exercises are selected entirely with a view of preparing for the exigencies of the military service at home and in the colonies. The course extends over ten months, commencing October 10th of each year. The subjects are:

1. Hippology (including history of the horse; the study of his exterior; the breeds and breeding of horses; training and use of horses; hygiene and sanitation).
2. Practical exercises in equestration and military drill.
3. Practical exercise in horse-shoeing.
4. Contagious diseases and their prevention, including tropical maladies.
5. Meat inspection and forage inspection.
6. Military law and exercises in rendering written reports.
7. Clinics.

Specials: Ophthalmoscopy, microbiology, topography.

The staff of instructors consists of:

One veterinary major, director of the school, instructor in hippology and military law; at present M. Boellmau.

One veterinarian I Class, captain, instructor in clinics, M. Joly.

One veterinarian II Class, first lieutenant, instructor in meat inspection and forage inspection, M. Viveau.

One first lieutenant of cavalry, instructor in equestration and military drill, M. de la Brosse.

Other special instructors are detailed from time to time for ophthalmoscopy, microbiology, topography, etc.

The daily schedule of exercises and lectures is as follows:

In the winter season: 8 to 9 A. M., exercises in farriery; 9 to 10.30, clinics, operations; 10.30 to 12, lecture; 12 to 1.30 P. M., casino; 1.30 to 3, exercises in equestration and military drill; 3 to 4.30 clinics; 4.30 to 5.30, lecture.

In the summer season, 6 to 8 A. M., practical exercises in equestration and military drill.

The army veterinary school is housed in the buildings of the former Government Stud, which was located here. The grounds are extensive and consist of a large garden for forage plants and large pastures, which are now used for paddocks and running yards. The buildings consist of separate pavilions for operating, post-mortems, isolation sheds, and cottages for the workmen. The largest building is the "Somo Sienna," of which the floor space is taken up with boxes and stalls for patients and the pharmacy; while upstairs are the bacteriological laboratory, a pathological museum and an interesting hippological museum, together with the offices of the director and the lecturers. But the most interesting building is the pavilion Henry Bouley, containing the library of rare ancient and mediæval manuscripts and books of great value, which is adjoined by the spacious lecture room. The walls of this room are adorned with a remarkable collection of paintings of army veterinarians, beginning with the time of the great conqueror Napoleon. There are memorial tablets in bronze giving the names of those who offered their lives on the battle-field. There are busts and portraits of former lecturers and students, and of well-known authors who have come from this school, such as Leuck, Séon, Nègré, Sipièrre, Targes, Neuman, Nocard—all arranged through the patriotic fervor of the late Veterinary Colonel Aureggis. Verily, here one breathes a fine atmosphere of mental work, valor and honor, that must well prepare young men for a career which calls for discipline of mind and body.

One can understand, therefore, that the veterinary cadets are a well-behaved lot of young gentlemen. They enter the school without the least previous knowledge of military discipline, while the other schools are composed of officers and men familiar with the strict rules of the service. Yet, the veterinary cadets have always carried themselves so well that the commandant of the cavalry school—a brigadier general—has taken every year the opportunity to publicly praise them for their fine conduct and discipline.

The question here arises, why should we not adopt whatever is suitable in the French method to meet our needs and put it into practical service by the establishment of an army veterinary school at Fort Riley?

Let us see the commendable points about the French Army veterinary school, which command serious consideration. First, the veterinary school is established in connection with the national cavalry school; second, it has companion schools of farriery and saddlery; third, it molds young civilian veterinarians from remote corners of France, the townsman or the countryman, into persons fit to meet army needs; fourth, it imbues them with the feeling that they are part and parcel of the army organization, professional units in a military system embodied for protective purposes.

Happily, if an army veterinary school could be established at Fort Riley, the institution thus established, though a novelty *in se* in the American military system, would not be so strangely new as to excite opposition. Fort Riley is the great cavalry post of the United States Army where there is a school for the higher training of mounted officers; where, also, a school for farriers exists; and where instruction is given in hippology to young commissioned officers, as well as instruction in subjects grouped as farriery to non-commissioned officers and enlisted men, by veterinarians of the line detailed for this special duty. Accordingly, the establishment of an army veterinary school at Fort Riley would be but another step forward, in keeping with the progress already made at that great army center for the improvement of equestration in the cavalry regiments and artillery corps. In this respect, we would be doing what the French did long ago when they established an army veterinary school at Saumur, in the year of grace 1854, where their national cavalry school had existed and thrived since 1771.

What, now, would be the benefits to be derived from the scheme proposed? The solution of the question, How to stamp out the plagues of disunity which appears among army veterinarians and to be rid of the mental inertia, is to establish an army veterinary school, anywhere, probably most profitably at Fort Riley.

To-day the young veterinarian, who may be so young indeed, as to be incapable of growing an eiderdown moustache, passes an examination and begins his army life. He knows nothing of army customs, manners, ideals; of how he should conduct himself and what is expected from him. He knows nothing of the army regulations, of military law and practice as it applies to him. He hardly knows what his duties are; nor how he shall go about them; so much is he accustomed to strange

differences outside in the civilian world. It is more than likely that the only other veterinarian that he finds at the post did not graduate at his college; so the two heartily dislike one another when that subject is broached at least. That subject, too, will crop out be he ever so canny a man. As a novice in the army, what to think, what to do, and how to act, he knows not. Small wonder that he cannot readily agree professionally with another army veterinarian, since *esprit de corps* has not been taught him nor bred into him. Small wonder that the downy couch of inertia is so acceptably snug; since there is no necessity compelling him to be primed and keep alive in recent knowledge in his science.

To-morrow these things will change: if an army veterinary school can be established to make the change. What would be the curriculum, who would be the instructors, to whom should the courses be offered? would be easy matters to settle. The veterinarian who is a newcomer in the army should pass a novitiate of at least six months at the school; not only to be reviewed in equestration military law and the regulations which concern him in the veterinary service at home and abroad, tropical diseases and the like, but to give him proper views of his work and his place in the military system, and to particularly charge him with a sense of unity, peace and concord in the veterinary body. All the men, having passed through this novitiate, will be found to have cast aside silly, nonsensical estrangements or differences which are the spawn of contention over this, that or the other college. Made more patriotic and loyal, vitalized by the spirit which will be master in the army veterinary school, the men will return to their regiments as army veterinarians in the Old World sense, as necessary and vital increments of the American military organization.

D. ARTHUR HUGHES.

SOME forty-five veterinary inspectors have been transferred within the Bureau of Animal Industry service during the short period of one month.

ALTHOUGH the Chicago Veterinary College has been obliged to turn away many students who were unable to comply with the matriculation requirements agreed upon by the Association of Veterinary Faculties and Examining Boards of North America, yet this progressive institution is forging ahead with an attendance of over four hundred students.

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the above association for the month of November was held in Donaldson Hall, Broad and Filbert streets, Philadelphia, Pa., on Tuesday, November 12, 1907, Dr. J. W. Vansant, the Vice-President, occupying the chair.

The following members responded to roll-call: Drs. Lintz, Rhoads, Schnider, Cox, Underhill, Vansant, Harger, Eves, Hoskins, Marshall. Visitors: Dr. William Kelly and Dr. Laurence, of the Fifth Cavalry, P. I., and several students of the Veterinary School of the University of Pennsylvania.

Dr. William C. Prouse, of Wilmington, Del., was duly elected to membership. Dr. Laurence gave a very interesting and instructive talk upon Surra, as he had seen the disease in the Philippine Islands, which was very much enjoyed by all present.

Dr. S. J. J. Harger followed with a description of the various Trypanosoma.

In the reports of cases which followed, Dr. Harger reported performing paracentesis upon a coach horse, who was suffering from pleurisy. He aspirated early in the disease, and repeating the operation twice, the animal recovered. He suggested that as soon as the exudate was marked to operate; don't delay.

Dr. Hoskins reported that the next meeting of the A. V. M. A. would be held in Philadelphia, and Dr. Rhoads moved that a committee of five be appointed to work in conjunction with the Pennsylvania State V. M. A. to look after the interests of the A. V. M. A. meeting, which was promptly carried.

Dr. Hoskins reported several cases of glanders, which he tested with mallein, and in his opinion all animals that react should be destroyed or completely isolated.

Meeting adjourned at 11 P. M.

The regular monthly meeting of this association for December was held at the usual place, Dec. 10, 1907, Dr. B. M. Underhill, the President, occupying the chair.

The following members responded to roll-call: Drs. Lintz, Schnider, Houldsworth, Harger, Kirby, Hoskins, Jarrett, Van-

sant, Rhoads, Reichel, Underhill, Fitzpatrick, Marshall. Visitors: Drs. Williams and Laurence.

Drs. Thomas Kelly and E. S. Dubler were regularly admitted to membership.

Dr. Reichel presented a tumor for examination—a sarcoma of a sebaceous gland, which had been removed from a cow by Dr. Heretz, of Waynesburg, and sent to Dr. Reichel for examination. It was an interesting specimen, presenting much the appearance of a tubercular growth.

Dr. Harger's paper upon "Acute Bright's Disease" was thoroughly scientific, highly instructive, and was well enjoyed by all present.

Drs. Williams, Harger and Marshall reported interesting cases, which brought forth liberal discussion.

Dr. Hoskins reported the conviction of an illegal practitioner, Mr. Chany, of Green County, Pa., and he is now serving his time in jail. There are several more to be tried during the January term of court.

Meeting adjourned at 11 P. M.

A. W. ORMISTON, D. V. S.,
Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The December meeting of this Association was held in the Lecture Room of the New York-American Veterinary College, on Wednesday evening, December 4, 1907. In the absence of President Bell, the Vice-President, Dr. Charles E. Clayton, presided. There was a good attendance of members and visitors. The minutes of the previous meeting were read and approved.

Dr. R. W. Ellis presented a case report on "Rabies in a Dog." The case was a peculiar one and the doctor related the conflicting symptoms as described by several laymen who had seen the case. The diagnosis of rabies was confirmed by the demonstration of the Negri bodies at the Board of Health Laboratory. This case brought out an interesting discussion on rabies, which was entered into by Drs. Grenside, Robertson, Chase, Crawford, Blair and others.

Owing to the absence of two of the members who were on the program to present case reports, the question box was re-

sorted to for material for discussion. The question of "What is the earliest age at which you have castrated colts?" The earliest age was nine days, reported by Dr. Clayton, although he explained he did not personally approve of castration at this early period. Drs. Ellis, MacKellar and Grenside discussed the subject.

Dr. Blair exhibited two tape-worms, one from an Indian rhinoceros and the other from a polar bear. The specimens were examined by all the members with interest, the doctor explaining that areca-nut and extract of male shield fern were the anthelmintics used in expelling the worms.

After the discussions were closed, the report of the treasurer was read. The Auditing Committee having reported the account correct, report was accepted.

The election of officers for the ensuing year was next in order and resulted as follows:

President, Dr. F. C. Grenside.

Vice-President, Dr. R. S. MacKellar.

Secretary and Treasurer, Dr. W. Reid Blair.

At the conclusion of the election, Dr. Grenside was asked to take the chair, and in doing so expressed his appreciation of the honor conferred upon him, and asked the members to continue the same hearty support given to the retiring president, Dr. Bell, so that the meetings would continue to be interesting and profitable.

On motion, seconded and carried, the president was instructed to appoint a committee to draw up suitable resolutions of appreciation of the retiring president's efforts in bringing before our meetings the interesting programs which we have had during the past two years.

The president appointed Drs. Robertson and Blair as members of this committee.

For the January meeting Drs. MacKellar, Darke and Chase volunteered case reports.

Meeting adjourned.

W. REID BLAIR, *Secretary*.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

A meeting of the officers of this society was held at the Vanderbilt Hotel, Syracuse, N. Y., Dec. 23, 1907, at 11 A. M.

Representatives were chosen to attend the International Congress on Tuberculosis, to be held at Washington, D. C., Sept. 21 to Oct. 12, 1908.

Committees were appointed by President W. L. Baker. Arrangements were made for the annual meeting of the society, which will be held at Utica, N. Y., in September, and other necessary business was transacted.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The twenty-fourth annual meeting of the above association will be held at the Trenton House, Trenton, N. J., on Thursday, January 9, 1908, at 10 A. M.

The program includes the President's address, report of the State Board of Veterinary Medical Examiners, election of officers, presentation and discussion of papers and the consideration of legislation for the establishment of a State Bureau of Animal Industry.

The veterinary service of the state under existing laws is unsatisfactory to the profession and does not meet the requirements of conditions in an effective and adequate manner. It seems to have grown up wholly without plan, and is in consequence so unwisely distributed among the executive departments that much of its effectiveness is lost for lack of proper co-ordination. There is found duplication, ineffectiveness, and not infrequently unwarrantable delay in the service as administered, as well as a divided responsibility and a want of professional direction.

In order to place the veterinary work upon an effective and economic basis in the state it is necessary to concentrate related lines of the service and to centralize authority and fix responsibility. The proposed legislation provides for consolidation and the establishment of a State Bureau of Animal Industry, to be conducted in the light of modern veterinary science and practice. Nothing of a greater or more far-reaching importance could come before the profession than such legislation, which concerns both agriculturists and sanitarians as well as the public in general.

President Loblein makes an earnest appeal to every member of the Veterinary Medical Association of New Jersey to attend

the forthcoming meeting. He also extends a most hearty and cordial invitation, through the REVIEW, to veterinarians in general, agriculturists and sanitarians who may be interested or concerned in the elimination of antiquated and inadequate methods for a proper and effective administration of veterinary affairs along lines of modern science and practice.

WM. HERBERT LOWE, *Secretary*.

GENESEE VALLEY VETERINARY MEDICAL ASSOCIATION.

The eleventh annual meeting of the Genesee Valley Veterinary Medical Association will be held at the Rochester Club, Rochester, N. Y., on Thursday, Jan. 9, 1908.

Meeting will be called to order at promptly 10 o'clock A. M., when the business of the association will be transacted and directors and officers elected. A recess will then be taken for dinner, furnished by the association in the club rooms for its members and visitors.

The afternoon session will be devoted to the reading of the papers, as follows: "Horse Shoing," Dr. J. C. McKenzie; "Laminitis," Dr. William H. Mahony; "Navicular Disease and Its Diagnosis," Dr. U. Switzer; "Infections of the Foot," Dr. H. S. Beebe.

An evening session will be held for the discussion of papers, consideration of the contents of the "Question Box," ending in a social session.

J. H. TAYLOR, *Secretary*.

YORK COUNTY (PA.) VETERINARY MEDICAL SOCIETY.

This society held a very successful meeting in the parlors of the National Hotel, York, Pa., on Tuesday, Dec. 3, 1907. There was a large number of veterinarians present from the city and county. Important subjects before the society were considered and plans for future work mapped out.

In the report of the Secretary it was shown that creditable work was being accomplished by the society in York County.

Papers were read on "Epizootic," "Lymphangitis of Horses and Mules," "Paralysis of the Lips," "Influenza and Its Sequels." The new state law regarding the use of stallions for breeding purposes was discussed.

Next meeting at York, March 3, at 1 P. M.

E. S. BAUSTICKER,
Secretary.

VETERINARY ASSOCIATION OF THE DISTRICT OF COLUMBIA.

A meeting of the Veterinary Association of the District of Columbia was held on the evening of November 27, 1907, at Oppenheimer's Hall, 514 Ninth street N. W., Washington, D. C., It was well attended. Matters of importance were discussed and an address was delivered by Dr. H. W. Acheson on his experiences in the local and western horse markets. The address was very interesting and instructive, and a rising vote of thanks was tendered the Doctor at its conclusion.

F. M. ASHBAUGH, D. V. S.,
Secretary.

AMONG those who will address the Veterinary Medical Association of New York City, at its meeting on the evening of January 8th, is Professor W. L. Williams, of Ithaca, N. Y. The newly-elected President, Dr. F. C. Grenside, will preside. The indications are that the attendance will be large from New York and vicinity.

A VETERINARIAN WITH PLENTY OF MONEY.—P. J. McGuinness, D. V. S. (A.V.C. '94), a prominent veterinary practitioner of the City of Newark, N. J., is handling more money than any other veterinary surgeon we know of at the present time. His success in this direction, however, is due to the fact that he is holding the office of County Collector of Essex County, New Jersey. Dr. McGuinness, however, receives a large salary, much more than is paid to veterinarians holding responsible professional positions in either state or federal service.

NEWS AND ITEMS.

PROFESSOR LIAUTARD is convalescing from an attack of acute bronchitis.

EDITOR BELL has been elected an honorary member of the Veterinary Practitioners' Club of Hudson County, New Jersey.

COOPER CURTICE, D. V. S., Bureau of Animal Industry, U. S. Department of Agriculture, is working on the tick eradication problem.

DR. O. T. AMYRAULD, Veterinarian (McGill), of Berlin, Mass., called at the REVIEW office Dec. 3, 1907, on his way to Los Angeles, Cal.

VETERINARIAN WALTER R. PICK, 1st U. S. Cavalry, formerly at Fort Sam Houston, Tex., is now stationed at Manila, Philippine Islands.

DRS. ROBERT I. BERNATH, FRANK HECKER and PAUL P. TAYLOR have been appointed veterinary inspectors in the Bureau of Animal Industry. Drs. Bernath and Hecker are on duty at Chicago, Ill., while Dr. Taylor has been assigned to Tacoma, Wash.

SOCIETY WOMAN PAYS \$5,000 FOR BULLDOG.—Miss Innes E. Schaeffer, a well-known society leader of Germantown, Pa., has purchased for \$5,000 the unbeaten English bulldog Champion Mahomet. The dog was on exhibition at the recent Philadelphia dog show, where one year ago Mahomet had won his American championship. Since then the dog has been in the hands of a dealer in Newark, N. J.

Miss Schaeffer has just completed a \$20,000 kennel and had prepared a fine apartment for the best dog that appeared at the Philadelphia show. Champion Mahomet was not entered for competition but in a special class only. His superior quality appealed to Miss Schaeffer, and, undeterred by the catalogue price of \$5,000, she bought the dog and installed him in her kennel.

Mahomet was raised in England by a tradesman. Being offered what looked like a fabulous sum to him the Englishman parted with his pet. The dog was brought to this country and has an unbeaten record.—(*New York Herald*.)

BANQUET OF THE VETERINARY PRACTITIONERS' CLUB.—The first annual banquet of the Veterinary Practitioners' Club of Hudson County, New Jersey, held at the Columbian Club, Jersey City, on Monday evening, Dec. 16, 1907, was a notable social function long to be remembered and one that would have been a credit to any state association in the land.

The attendance was large and representative in character. The decorations were beautiful; the menu was most excellent, and the postprandial speeches were much enjoyed. Dr. Thomas Emmitt Smith, President of the club, was most happy and facetious in his remarks.

Among the guests present were Drs. E. L. Loblein, New Brunswick, N. J.; Geo. H. Berns, Brooklyn, N. Y.; W. Reid Blair, Bronx Park, N. Y.; E. B. Ackerman, Brooklyn, N. Y.; T. Earle Budd, Orange, N. J.; Chas. E. Clayton, New York City; J. Huelson, Jersey City, N. J.; R. F. Rabe, M. D., Union Hill, N. J.; John B. Hopper, Ridgewood, N. J.; J. Payne Lowe, Passaic, N. J.; J. T. Glennon, and P. J. McGuiness, Newark, N. J.; James McDonough, Montclair, N. J.; Kingston, New York City; Nichols, Staten Island, N. Y., and William Herbert Lowe, Paterson, N. J.

One of the most happy incidents of the evening was the spontaneous election of Editor Bell, who was absent on account of illness, to honorary membership in the Practitioners' Club. Dr. Bell is the first and only individual to have been thus honored by the club.

From the remarks of President Smith it was evident that the club intends to be a factor in molding public opinion in Hudson County along lines of modern veterinary sanitary science. The club advances scientific and practical reasons why it is necessary to have at least one qualified veterinarian on the Board of Health of Jersey City. The prospects look bright for such an appointment to be made by the incoming Mayor, who assumes office on the first day of the new year.

The officers of the Veterinary Practitioners' Club are: Dr. T. E. Smith, President; Dr. R. F. Meiners, Vice-President; Dr. A. F. Mount, Secretary and Treasurer. Drs. R. F. Meiners, James Lindsay and R. J. Halliday formed the dinner committee, and the reception committee consisted of Drs. R. R. Ramsay, E. A. Hogan and Geo. W. Smith.

These gentlemen have demonstrated that the veterinarian has a social side that is only too often neglected in our organization work.

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VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
American V. M. Ass'n.....	Sept. 8,9,10 & 11.	Philadelphia..	R. P. Lyman, Hartford, Ct.
Vet. Med. Ass'n of N. J.....	Jan. 9, 1908.....	Trenton	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.....	1st Tu. Feb.....	Hartford	B. K. Dow, Willimantic.
New York S. V. M. Soc'y.....	Sept., 1908.....	Utica.....	M. Hamilton, Delhi.
Schuylkill Valley V. M. A.....	.....	Reading	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.....	Call of Chair...	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Call Exec. Com.	.....	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	Wm. T. White, Newtonville.
Maine Vet. Med. Ass'n .....	.....	.....	R. E. Freeman, Dexter.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Michigan State V. M. Ass'n.....	Feb. 4-5, 1908	Lansing.....	Judson Black, Richmond.
Alumni Ass'n, N. Y.-A. V. C.....	April, 1908.....	141 W. 54th St.	T. F. Krey, N. Y. City.
Illinois State V. M. Ass'n.....	July, 1908.....	Chicago.....	N. I. Stringer, Paxton.
Wisconsin Soc. Vet. Grad.....	.....	.....	S. Beattie, Madison.
Illinois V. M. and Surg. A.....	.....	Decatur.....	C. M. Walton, Rantoul.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n.....	July 2-3, 1908	Raleigh	Adam Fisher, Charlotte.
Ontario Vet. Ass'n.....	.....	.....	C. H. Sweetapple, Toronto.
V. M. Ass'n, New York City.....	1st Wed., Jan.....	141 W. 54th St.	W. Reid Blair, N. Y. City.
Ohio State V. M. Ass'n.....	Jan. 14-15, 1908.....	Columbus.....	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.....	Pittsburgh.....	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n.....	.....	.....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n.....	Jan. 9, 1908.....	Rochester.....	J. H. Taylor, Henrietta, N. Y.
Iowa Veterinary Ass'n.....	Jan. 28,29,30, '08.....	Cedar Rapids.....	H. C. Simpson, Denison, Ia.
Minnesota State V. M. Ass'n.....	2d Wk. Th. Jan.....	St. Paul	C. A. Mack, Stillwater.
Pennsylvania State V. M. A.....	March, 1908.....	Philadelphia..	F. H. Schneider, Philadelphia.
Keystone V. M. Ass'n.....	Monthly.....	Philadelphia..	A. W. Ormiston, 102 Herman St., Germantown, Pa.
Colorado State V. M. Ass'n.....	.....	Denver	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n.....	Feb., 1908.....	Kansas City..	B. F. Kaupp, Kansas City.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ..	T. E. Robinson, Westerly, R. I.
North Dakota V. M. Ass'n.....	.....	.....	C. H. Martin, Valley City.
California State V. M. Ass'n.....	Mch. Je. Sep. Dec	San Francisco	C. M. Haring, U. C., Berkeley.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Edmons, Los Angeles.
South Dakota V. M. A.....	.....	.....	E. L. Moore, Brookings.
Nebraska V. M. Ass'n.....	.....	.....	Hans Jensen, Weeping Water.
Kansas State V. M. Ass'n.....	Jan. 2-3, 1908.....	Manhattan ..	Hugh S. Maxwell, Salina.
Ass'n Médécalle Veterinaire Française "Laval".....	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n.....	.....	Not decided ..	D. A. Piatt, Lexington.
Washington State Col. V. M. A.....	Monthly.....	Pullman, Wa.	Wm. D. Mason, Pullman.
Indiana Veterinary Association.....	An'l, Jan., '08.....	Indianapolis..	E. M. Bronson, Indianapolis.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Twin City V. M. Ass'n.....	2d Thu. ea. mo	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n.....	.....	Auburn, Ala..	J. C. Robert, Agricultural Col.
Georgia State V. M. A.....	.....	.....	C. L. Willoughby, Experiment
Soc. Vet. Alumni Univ. Penn.....	June, 1908.....	Philadelphia..	B. T. Woodward, Wash'n, D. C.
Virginia State V. M. Ass'n.....	.....	.....	S. C. Neff, Staunton.
Oklahoma V. M. Ass'n.....	.....	.....	W. H. Martin, El Reno.
Veterinary Practitioners' Club.....	Monthly.....	.....	A. F. Mount, Jersey City.
Vet. Ass'n Dist. of Columbia.....	4th Wed. ea. mo.....	514-9th St., N. W.	F. M. Ashbaugh, Wash., D. C.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo... ..	Chicago.....	J. Madsen, Chicago, Ill.
Arkansas Veterinary Society.....	.....	.....	B. H. Merchant, Little Rock.
York Co. (Pa.) V. M. A.....	March 3, 1908.....	York, Pa.....	E. S. Bausticker, York, Pa.
Philippine V. M. A.....	.....	.....	R. H. McMullen, Manila.
Montana State V. M. A.....	Oct., 1908.....	Helena.....
Veterinary Ass'n of Alberta.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can

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